THE SCANDINAVIAN CHURCH, ROTHERHITHE.

So numerous are the Norwegian and Swedish seamen who come to the port of London, that it is proposed to build a church for them in Rotherhithe, and we have engraved the design for it that has been made, under the direction of a committee, by Messrs. Giles & Biven, architects, though, as we now understand, it may possibly be somewhat altered before the intention is carried out. In plan it is hexagonal: the accommodation is for 250 persons, and a small gallery could at any future time be added. There are two distinct reading-rooms adjoining, for the use of merchant seamen and captains; and these rooms, also, could at any time be thrown open by means of a movable screen, so as to increase the accommodation of the church. Two living-rooms are provided for the use of a resident official, in whose charge the whole establishment would be. The building is of a simple Gothic character; the material for the walls would be brick; the roofs covered with slate. The interior of the church is to be faced with malms. The apse of the chancel is semicircular, and lighted by small lancet windows.

The somewhat peculiar plan was necessitated by the shape of the ground; but as the committee have now obtained the grant of a larger piece of land, a change of plan to some extent is contemplated.

BENCH-ENDS IN THE CHAPEL, HATFIELD HOUSE.

THE Marquis of Salisbury has just now made some alterations and additions in the private chapel of his mansion (Hatfield House, Herts). These alterations include an altar-rail, a reading-desk, a double-seated chair, a light rood-screen, and some bench-ends. All these fittings are executed in oak and teak, inlaid with ebony and other woods, and were designed by Messrs. Carpenter & Slater, architects. Mr. James Forsyth has executed the carving, under the direction of the architects, in an admirable manner. The delicacy and finish of the details of each design are remarkable. Of three of the bench-ends, which are very elaborate, we give representations.

The rood-screen is in the Elizabethan style, very light in construction. It is composed of fifteen arches, supported by slender shafts, enriched with carving. The caps are of teak, and highly wrought. The centre arch, which forms the entrance, is about double the width of the others.

THE SEWAGE QUESTION.

Leek.—The clean and good-looking little town of Leek promises to become, in vital statistics, a model town to the country. The sewerage works have been in existence nine years. The beneficial results have been great. The annual number of deaths in the decade ending in 1860 was 29 to the 1,000; during the last decade it was 24; and the average ages of the dead have risen from 24·8 to 32·5. Thus the average duration of life has been prolonged by nearly one-third. 492 persons are now alive in Leek, who, had the ratio of deaths in the first decade continued, would now have been dead. Those who died during the last decade lived, in the aggregate, 16,309 years longer than they would had the average age at death during the previous decade been continued. Had no sanitary improvements been made, many would have been widows and orphans whose husbands and parents are now living. There has been a corresponding decrease in sickness, the money savings of which, reckoning each case at five shillings a week for 50,752 weeks, amounts to 12,688*l.* Of the sickness prevented 16,917 weeks are saved to the workers between 15 and 55 years of age, being a saving of 6,343*l.* 17*s.* 6*d.*, even though a man's wages were only 10*s.*, and a woman's 5*s.* per week. The funeral expenses saved, at 5*l.* each, amounted to 2,460*l.* The direct money saving was 21,491*l.* 17*s.* 6*d.*, not to speak of the unspeakable advantages of every kind from improved health and prolonged life. Thus the drainage of a town not only benefits the owners of property, it benefits the poor above all persons.

Brighton.—That there will be opposition to the Brighton Intercepting and Outfall Sewers Bill appears from three petitions lodged against it; one by the west Hove Improvement Commissioners, another by the Brunswick Square and Terrace Commissioners, and a third by Vallance's Trustees. The first petitioners submit that they and the inhabitants of the said district will be most injuriously affected by the provisions of the Bill; urge various reasons against it; and insist that a better and more efficient and less costly scheme can be devised for draining the town of Brighton and the district of the Brunswick Square and Terrace Commissioners and of the petitioners.

Leicester.—A report by Mr. Baldwin Latham, C.E., on the proposed utilisation of the sewage of Leicester, is about to be placed before the public. The local *Advertiser* thus refers to some of the chief points in the report:—

"The first consideration is, how to get the refuse of our large town on to the adjacent lands. Happily, the physical features of the town and neighbourhood are admirably suited to this object, quite one-half the area of the sewered portion of the town being at a level of, at least, 20 ft. above the lowest portions of the district. This favourable circumstance Mr. Latham would take advantage of by dividing the town into two areas—the high-level and the low-level; the former he would surround with an intercepting sewer of dimensions sufficient to carry away 1 in. of rainfall in twenty-four hours. For the low-level he proposes that the rainfall should be carried direct to the river; disconnecting the surface-water drains from the sewage; and he would convey the sewage from this district to the works in the Abbey Meadow, where, by an alteration of the machinery, he would pump it up to the moderate elevation of the outfall works of the proposed intercepting sewer, which will be quite sufficient to insure its distribution on the land at no remote distance from the town. By this means the working expenses of pumping the sewage to the land would be greatly reduced. Mr. Latham informs the town council that about 900 acres would be wanted. But the same authority states that there are 1,350 acres between Thurmaston and Sileby entirely commanded by gravitation from the higher level of the town; while between Leicester and Thurmaston there are 650 acres that would be reached by direct gravitation from the higher district, and by pumping the low-level sewage. Here is land in proximity to the town, in sufficient quantity for double the present amount of sewage; and the means of getting it there pointed out. The expense Mr. Latham estimates at 23,000*l.*, entailing an annual outlay of 6,312*l.* for working expenses, interest on capital borrowed, and annual instalments for repayment of capital. The receipts are estimated at 9,750*l.*, thus leaving a very handsome annual profit. Should this prospect be realised, it would afford a wonderful contrast to our present system, whereby a loss is sustained of 1,200*l.* a year, while our river is polluted, and a great deal of annoyance suffered in many districts."

A dairy-farm is suggested in the report as an additional source of profit.

KITCHEN BOILER EXPLOSIONS.

THE explosion of kitchen and circulating boilers, in the north of England especially, is at length exciting attention.

At the last meeting of the executive committee of the Manchester Steam Users' Association, Mr. Thomas Schofield, in the chair, in the absence of the president, Sir W. Fairbairn; Mr. L. E. Fletcher, chief engineer, referred to the number of fatal household boiler explosions that have recently occurred. Owing to the number of lives which had been lost by such explosions during the recent frost, it was thought important to circulate at once some suggestions with regard to the cause of these disasters, with the hope of preventing their recurrence should the frost return. Under these circumstances the subject was only briefly touched on, the chief engineer hoping to treat it more fully, with the aid of illustrations, in his next ordinary monthly report.

The cause of kitchen or bath boiler explosions, he said, is very much misunderstood, and hence the constant recurrence of these disasters. They are wrongly ascribed to the introduction of a few drops of cold water into a red hot boiler. They are attributed to the thaw, whereas they are the result of the pipes being sealed by the frost. That the sudden introduction of cold water into a red hot boiler will not cause an instantaneous generation of pressure sufficient to produce an explosion was shown by repeated experiments, fully described in the chief engineer's report for January, 1867.

The boilers that explode on the occurrence of frost are on the circulating principle. They are connected by two pipes to an overhead cistern, the result of which is that on the application of a fire to the boiler, as soon as the water becomes heated it rises through one of these connecting-pipes, while the cold water, by its superior gravity, descends in the other, so that a constant circulation is kept up as long as the fire remains in action, while the boiler and pipes are full, the passages open, and there is any water left in the overhead cistern. As long as these pipes are open they form a natural safety-valve, and afford a pressure due to the height of the column of water, and no more; but as soon as the frost seals them up the pressure accumulates as long as the fire burns, when explosion becomes merely a question of time. This is the simple cause of these disastrous explosions, and that being so, it is clear that all that is needed to prevent them is to adopt the very simple precaution of fixing to every circulating boiler a reliable safety-valve that will not be affected by the frost. The valve recommended was of the external pendulous dead-weight construction, and, having no lever, hinged joint, wings, or spindle, was not at all liable to derangement. These valves should be fixed in the front of the range, being brought out, if necessary, by means of a connecting-pipe, so as to be always in sight, and accessible. If it is once fairly recognised that the cause of these explosions is a gradual accumulation of pressure, added Mr. Fletcher, it will not be long before some suitable measures are contrived to meet it. To set a boiler in a kitchen alongside of a brisk fire, without a safety-valve, or something equivalent thereto, is very much like putting a cask of gunpowder into the oven to bake.

Since our last note of cases of kitchen-boiler explosion, one has occurred at Abbeydale, near Sheffield, and another in Derbyshire. In that at Abbeydale two men were killed while at breakfast; and in that at the Rectory, Long-lane, Derbyshire, one woman was killed, and two others were terribly injured.

A WORD ABOUT THE THAMES EMBANKMENT.

SIR,—I believe the Thames Embankment will illustrate two proverbs: 1st. "Penny wise and pound foolish;" 2nd. "The ship will be spoiled for want of a penn'orth of tar."

First, as to the footway. Can anything be more miserably insufficient? It might be the very finest promenade in London. It is about one-half the width it should be. It is of more importance to London as a recreation-ground than the opening of a new park in any situation would be. Think of the numbers of poor women and children who cannot go out of London, but who might on any fine day stroll upon the Embankment for an hour. Think of the crowds who, in summer time, go by steamer, and who would go in yet greater numbers, if the river were made as it might be made,—the most beautiful thoroughfare in London. Think of any public occasion, like Lord Mayor's Day, the arrival of the Belgians, a coronation, a great public funeral, the entry of any distinguished potentate, any public procession. Can it be contended for one moment that the present proposed width of roadway and footway would be sufficient for such a purpose?

The Thames Embankment, properly carried out, should be, for the poor women and children of Southwark and Lambeth, Seven-dials, Holborn, &c., what Hyde Park is for the upper classes. It should be, and will be, their Sunday promenade. The simple question is, shall it be a great public boon, giving health to these poor creatures who so much need it? or shall it be a great failure, as it will be, if built upon, as proposed? A huge piece near Westminster Bridge is already appropriated for private gardens, at a great sacrifice, as far as the public, and especially the poor, are concerned.

R. J.

THE TRADES MOVEMENT.

THE movement for the reduction in the hours of labour in the metropolitan building trade, just set on foot by the carpenters, has been taken up by the other branches in the trade, and at a meeting of operatives—painters, bricklayers, masons, joiners, plasterers, &c.,—held at the Lord Palmerston Tavern, Chelsea, on Saturday evening last, a society was formed to promote the nine-hours movement, and the following resolution was adopted:—

"That an invitation be given to the various societies in the building trade to send delegates to the society for the purpose of co-operating with it, and making a united effort of both unionists and non-unionists to obtain the reduction of the hours of labour to nine per day, the present depressed state of trade affording a favourable opportunity for the attainment of that object."

This society is quite independent of the delegate meeting of the carpenters and joiners, exclusively, who have drawn up the following new code of working rules for that branch of the trade:—

"That the working time be fifty hours a week, namely, nine hours on the first five days, and five hours on Saturday; that the wages be 8*d.* per hour; that piecework be

abolished; and that all overtime be paid for at the rate of time and a half up to 10 p.m., and double after that hour. Three months' notice to be given for the alterations. All disputes to be settled by arbitration."

A case has come before the Poplar Board of Guardians which illustrates the working of the Shipwrights' Union in Poplar. Mr. Traill, a shipowner, having a vessel under repair, at Millwall, applied for some shipwrights to execute the work, but, though he offered 6s. 6d. per day, none would accept the engagement under 7s. It was then suggested that among those in receipt of relief from the guardians there might be some willing to take the work. Accordingly, the relieving officer of Poplar examined the list of outdoor paupers, and found two shipwrights who were in receipt of outdoor relief. He sent for them and acquainted them with the facts, and even accompanied them to the dock. But they declined the offer, saying that they would gladly work for 4s. or 5s. a day, but that the work now offered them was "old work;" and, as they were members of the Shipwrights' Union, they could not work for less than 7s. a day. On the men coming before the Board of Guardians to ask for a renewal of their relief, strong indignation was manifested at their conduct.

LONDON CORN EXCHANGE COMPETITION.

WE give a list of architects who were invited to compete for the Corn Exchange, and have consented to do so. Mr. Whichcord, it will be remembered, declined to compete, he saw so many difficulties in the way as to rights of lights. The drawings are to be sent in on the 31st of this month:—

Messrs. Taylor, Manchester; G. Scott, jun.; J. Peacock; Giles & Biven; R. Hesketh; Salter & Wyatt; Cuthbert Broderick; W. G. Caldwell; W. H. Crossland; H. Stock; Banks & Barry; H. Carr; R. C. Baxter; E. A. Gruning; H. Dawson; and G. Truefitt.

LAMP STANDARD FOR THE THAMES EMBANKMENT.

A LAMP-STANDARD has been set up at the landing-place between Hungerford and Waterloo Bridge. It was designed and modelled by Mr. T. Butler, sculptor, and is intended to supersede the ordinary lamp-post, by the combination of artistic composition with allegorical narrative.

The meaning intended to be conveyed by the boys mounting the shaft, the one handing up the torch to the other with which to light the globe above, is allusive to that energetic spirit which characterises the British nation; and the reward of which is signified by the abundance poured forth from the cornucopias. The device on one of the panels below, composed of the caduceus and trident, symbolises our marine ascendency and commercial spirit. The other panel presents a bold oak wreath, within which is the date of the opening of the Embankment. The whole is intended to harmonise with the lions' heads, executed by the same artist, which already appear on the river front of the pedestals both on the north and south sides of the river.

The composition is better as seen from front or back than at the side. Should more of the standards be executed it would be desirable to reconsider this aspect of the design. We would observe also that it is somewhat too massive for a single lamp. It is better adapted to carry a group of lamps.

BUNHILL-FIELDS BURIAL GROUND.

A REPORT of the Bunhill-fields Committee of the Corporation just published shows that for the re-erection of the wall of the ground near the City-road, and for the provision of new gates and railings at an expense not exceeding 1,000*l.*, the tender of Messrs. Browne & Robinson was accepted, and the work had been completed in a satisfactory manner, and within the sum provided. They also gave directions for the construction of a number of paths, so planned as but slightly to interfere with the position of gravestones, and yet leading to or near the tombs of principal interest. Adjoining the paths they have caused to be planted at intervals on either side an additional number of plane and other trees, exceeding 600 in all. Some of the head and foot stones were in a dangerous condition, and others had sunk into the ground so as to be almost lost to view. These they directed should, where necessary, be raised and set in upright positions, and upwards of 450 stones have been so dealt with. The inscriptions of certain of the tombs have also been removed, and in some instances the tombs have been bricked up and repaired, where such a course appeared to be imperatively requisite. A plan of the ground and a record of every name and inscription have been made by Mr. George Rogers under their direction, and are to be kept in the Guildhall for public inspection. The total expense connected with the proceedings of the committee is 3,199*l.* 18s. 11d. Annexed to the report are copies of the inscriptions on five pillars erected on the ground, by which it would appear that it was inclosed in 1665 during the mayoralty of Sir John Lawrence; that in 1852 more than 120,000 bodies had been interred therein, and that it was opened on the 14th of October, 1869, by Sir James Lawrence, M.P. Other pillars furnish the names of the most eminent persons buried there, including John Bunyan, Daniel Defoe, Dr. Isaac Watts, Thomas Fowell Buxton, John Horne Tooke, General Fleetwood, Henry, Richard, and William Cromwell, Thomas Stothard, R.A., Lady Ann Erskine, Susannah Wesley, Thankful Owen, Dr. Thomas Goodwin, and others. Early readers of the *Builder* will remember how often we brought forward the claims of this burial-ground for careful preservation.

THE INCIDENTS OF RATING.

SIR,—Since the subject of rating is receiving special attention this session, it may not be out of place to consider recent legislation on the subject.

First, as to "The Valuation (Metropolis) Act, 1869." I fear the schedule of maximum deductions will lead to considerable unfairness. Take the following example:—"A" occupies buildings which would come under Class 5, and from their condition would require the maximum deduction of one-sixth; "B" occupies the adjoining paddock, rightly included in Class 7, and fairly entitled to an allowance of one-twentieth.

	Gross value.	Rateable.
Say "A"	£60	£50 0
Say "B"	10	9 10
	£70	£59 10

Now, assume that subsequently X becomes the occupier of both these properties, they would then come under Class 6, and be entitled to a deduction of one-tenth only—viz., 7*l.*, instead of 10*l.* as before, showing a loss to X by way of deduction equal to 33 per cent.

Secondly, as to "The Poor Rates Assessment and Collection Act, 1869." The power to distrain on the occupier's goods would appear to be entirely nugatory, as, if he chose to decline to pay without a distress, he could evade doing so altogether by taking care to hand to his landlord the rent before it was actually due. Provision that, after receiving the "demand in writing" from the overseers for the rate, he should be obliged to pay all future accruing rent to them until the rate was liquidated, would, I think, have rendered the provision effective; and if the occupier declined to do this, then to distrain on his goods would not be unfair. WM. EVE.

THE TRAMWAY BILL.

THE Board of Trade's Bill to facilitate the construction of tramways, and to regulate their working, has been issued. It provides that certificates authorising the construction of tramways may be obtained by the local authority with the consent of the rate-payers in such district; or by any person, persons, corporation, or company with the consent of the local authorities of such district. The promoters may sell or assign their right, but within two years or less must complete the tramway, and open it for public traffic. Every tramway shall be constructed of such width as may be prescribed, and shall be laid and maintained in such manner that the uppermost surface of the rail shall be on a level with the surface of the road. The promoters may open and break up any road, subject to regulations, and must reinstate the road and pay expenses of repair for six months. The promoters are at all times to keep in repair that part of the road where the tramway is laid. There are provisions as to the pipes of gas and water companies, and for the protection of sewers. The general provisions of the Bill give power to the promoters of tramways and their lessees to use on their tramways carriages with flange wheels, or wheels specially adapted to run on a grooved rail; and the promoters and their lessees shall have the exclusive use of their tramways for carriages with flange wheels, or other wheels specially adapted to run on a grooved rail. All carriages used on any tramway shall be moved by animal power only. Licences to use the tramway may in certain events be granted to third parties by the Board of Trade. There are also powers with respect to the future purchase of undertakings by local authorities, and for the removal of tramways.

MEDALS AND PRIZES OF THE INSTITUTE OF ARCHITECTS.

THE Council have recommended,—

That the Soane Medallion (with the sum of 50*l.* under certain conditions) be awarded to the author of the drawings distinguished by the device of "*A Comma within a Circle.*"

That the Institute Silver Medal, with 5*l.* 5s., be awarded to the author of the drawings distinguished by the motto of "*St. Lawrence.*"

That in the same competition, a Medal of Merit be awarded to the author of the drawings distinguished by the device of a "*Square and Compasses within a Panel.*"

That the Institute Silver Medal be awarded to the author of the essay distinguished by the motto "*Light, Utility, and Progress.*"

That the Student's Prize in Books be awarded to the author of the drawings distinguished by the motto of "*Truth.*"

These recommendations will be considered and determined at a special meeting on Monday evening next.

THE ARCHITECT AT THE HOUSES OF PARLIAMENT.

WE are sorry to learn that the First Commissioner of Her Majesty's Works has again called on Mr. E. M. Barry to deliver up the plans and drawings of the Palace at Westminster, and to forward all the contracts or correspondence constituting contracts, which at present remain unexecuted. Mr. Barry, in the interest of the profession, will doubtless hesitate before he complies with the first part of these requirements, and will have, in turn, to look to the profession for such an expression of opinion on the subject as may strengthen him in any endeavour he may think it right to make to support its rights.

ARCHITECTS' COMPETITION IN 1769.

A SUBSCRIBER writes,—At page 781 of your volume for 1869, in the article relating to a list of architects who sent in designs for building the Royal Exchange, Dublin, in 1769, I do not observe that "C. C. H." makes any mention of William Newton, No. 54. Was he not probably the William Newton who made the translation of "Vttruvius," in 2 vols. folio, in 1791? If he were a young man in 1769, he would be only of fair age on the *completion* of his translation twenty-two years after.

I name this, as you invite "waifs and strays" of information about the architects in his list.

FOREIGN WORK.

SIR,—We have at the present time large buildings being erected where a very large portion of the woodwork is imported from far up the Baltic Sea, and it is reported that it is anything but what it ought to be in its constructiveness; but this we are told is free trade, and for England's benefit. Such, in my opinion, is a great fallacy, neither do I believe it can be borne out by facts. We may ask who has the chargeability of the poor? I say English industry, by its great taxation. Then I say English labour has a right to be heard, and receive fair consideration at the hands of the Government. I would ask is not our architects' future affected in this question of foreign competition in our home markets? I believe it is. If architects wish their profession to hold a position in the future, as in the past, where architectural beauty and soundness of construction have added so much to their fame, then I ask them, with all due respect, is it to their credit to allow this class of joinery to be used in the construction of our large public buildings, where seasoned materials and sound workmanship are a matter of the greatest import both to their own standing as a profession, and to the English public, who have to pay an enormous tax to feed and shelter its unemployed? Is it England's policy to purchase cheap foreign rubbish in the present condition of labour? Ask the mechanics, or the shopkeepers, and the answer will be, No. Those who pay the musicians should have the right to dance.

One word to your correspondents "T. L. D." and "Senex," who think it justifiable for the building trades to assist their present condition, and to make labour more abundant by agreeing to a reduction of wages. With such a policy of political economy I cannot agree. Will the officials of our military and naval departments agree to have their salaries reduced? Will doctors and lawyers agree to work for less? If so, no doubt the building trades will equally agree. Dr. Adam Smith says that the

respectability and fame derived in some professions make up a large portion of reward, both of education and skill; but the skilful operative receives no special mark, and according to the economist must submit to the great fluctuations, as they present themselves. This is, no doubt, the principal cause of the existence of trade societies,—the concentration of labour, for the purpose of appraising it at its fair value, in consideration of a whole trade. The profits of employers are little known among building workmen, and I presume they would think them rather inquisitorial by asking to be allowed to look at their books in reference thereto.

A JOINER.

TOWN HALLS.

Scarborough.—At the last quarterly meeting of the Council, a report was read respecting the Old Town-hall property. Three estimates had been prepared by Messrs. Stewart, architects. The first amounted to 790*l.*, and proposed to convert the lower part of the building into two shops, and to effect other alterations; the second (1,075*l.*) provided for the rebuilding of the front with stone; and the third (2,300*l.*) was for a new building, containing two shops, large hall, &c. The rebuilding of the hall was finally resolved on.

Wirksworth.—The Town-hall and Market-house scheme is progressing favourably. From the prospectus issued by the company little doubt is felt but that the movement which the inhabitants have so long contemplated will now be carried out. The names of the committee include most of the gentlemen of influence in the town and neighbourhood. The prospectus states that "although the nominal capital of the company is fixed at 5,000*l.*, it is not anticipated that more than 4,000*l.* will be required to carry out the proposed objects." Of this sum more than 3,000*l.* have already been subscribed. A site has been purchased for 1,500*l.*

Epsom.—A meeting has been held at Crandon's King's Head Hotel, to take into consideration the desirability of erecting a new Market-house and Town-hall between the Clock Tower and Clay-hill, on the space of ground which the old town pond formerly occupied. The meeting was preliminary to a public one that will in a short time be called. Mr. Treherne, surveyor to the board of health, had made a drawing which explained the style of erection contemplated. Several suggestions were made and questions asked as to probable cost, how to be defrayed, &c., all agreeing on one point, that it would be most desirable and beneficial to the trade and interests of Epsom if carried out. It was suggested, subsequently, that the site selected could be improved upon by purchasing Albion-terrace, commonly called Coffee House-walk, and erecting it there instead of filling up the open space which gives a healthy appearance to the town. The estimated cost near the Clock Tower would be about 3,000*l.*

Cuckfield.—A correspondent of a local paper says:—"I understand it is intended to build a Town-hall on an eligible site, for the accommodation of the Petty Sessions, County Court, and other public business, and I hope it may be made suitable for lectures, concerts, penny readings, balls, &c. This would render our town more lively during the dull winter months, and be a permanent benefit to us also. Should this be carried out, I would suggest whether it would not be worth the serious consideration of the promoters to make an attempt to restore our "Lost Market." I can see no great difficulty in the matter, provided a suitable building be erected, which might be done economically by making the hall two stories; the upper one for Petty Sessions, County Court, &c., and the lower one for the market."

CHURCH-BUILDING NEWS.

Belbroughton.—A meeting has been held in furtherance of a proposal for rebuilding the parish church. It appears that several professional men,—architects and others,—have pronounced the roof unsafe, owing to the destruction, some time since, of one of the pillars which support it. The south wall has bulged out considerably; the north wall is more out of perpendicular than the south; and these two outer walls have mainly been kept from falling by means of an iron rod which crosses the church, and braces them together. Half the church and more is overhung by a huge gallery, greatly interfering with the sight and hearing of those placed under it; and the whole is filled with high-backed pews. It is considered necessary to rebuild the whole of the nave and south aisle, with the exception of the two remaining arches and a small portion of the south wall, and it is proposed to add a north aisle. The tower also requires various repairs and restorations, from mutilations it has undergone. The sum required for these objects is 2,000*l.*, at least. A subscription was opened a few months ago in aid of the scheme, and a sum of about 1,000*l.* has been promised. At the meeting a committee of management was appointed, and other steps were taken.

Carlisle.—The foundation stone of the new church of St. Paul has been laid. The new edifice will be bounded by Spencer-street on the east, Lonsdale-street on the north, and by two other new roads on the west and south sides respectively. The building will be erected of the Newbiggen red stone, and with high-pitched roofs, covered with green slates, and will be in the Early Gothic style, having windows with different patterns of geometrical tracery. Within, the church will consist of a nave nearly 30 ft. wide, and 73 ft. 3 in. long, divided from north and south side aisles by five Gothic arches of alternate red and white stone on each side, supported by circular columns. Height will be given to the nave by a clearstory above the arches, containing a series of circular windows and tracery. The chancel and vestries will be at the east end as usual, and the former will be 20 ft. 10 in. deep, and the arch dividing it from the nave will be the entire width. The whole of the roof will be of open timber work, and the seats will be open benches. The west front, which will look towards Lowther-street, and be visible from it, will have a large Gothic window, filled in with tracery. Two entrances are provided to the church, in addition to a third from the vestry, one being under the tower, and the other at the west end, under the large west window. It is hoped that funds will shortly be forthcoming for the erection of the tower and spire. These are designed to occupy the north-east angle of the church, and a portion of the foundations has already been provided for. When completed the spire will have an altitude of 120 ft. to the top of the vane. The tower will have angle buttresses and four pinnacles above, which will be the belfry windows in an octagonal story, and above which will rise the spire, having high open pinnacles over the spire lights in addition to the larger ones below. The church will accommodate rather more than 600 persons, and has been designed by Messrs. E. Habershon & Brock, of London, architects, and is in course of construction by Messrs. C. & J. Armstrong, of Carlisle, builders, whose tender for the execution of the works was recently accepted after a competition. It amounts to 2,930*l.* 5*s.*, being a little less than the architects' estimate. The walls are several feet high.

Silloth (Carlisle).—At a meeting in Silloth, in support of the cost of the new church there, the honorary secretary stated that he had 2,458*l.* provided or in hand. They were now, however, about 35*l.* short of the first contract of 2,495*l.* But beyond the contract there were several necessary expenses, as commission, salary, lighting, heating, and granite (previously provided). The cost of these would amount to 400*l.* or 450*l.* There would, therefore, still be some 500*l.* to raise (exclusive of the cost of the tower, estimated at 1,000*l.*). The church was rapidly advancing.

Upper Easton (Bristol).—The new church of St. Gabriel, Upper Easton, is about to be consecrated. The edifice is situated near Messrs. Leonard & Boult's collieries, and is said to be the first brick church that has been built in this neighbourhood. It consists of a nave, north and south transepts, chancel, and side chapels forming vestry and organ chambers. The tower is placed on the south side of the chancel, and the ground-floor is set apart for the organ, when one has been procured. Stone has been used as little as possible, the intention of the architect, Mr. J. Neale, of Bristol, having been to produce as much effect as possible by means of colour and arrangement of plan, rather than of expensive labour in the shape of mouldings, stonework, &c. The reredos consists of three arches, resting on shafts of Mansfield stone, and the creed, commandments, and the Lord's prayer have been written on a gold ground in the panel. The pulpit and font are of stone. At the west end of the building is a gallery, approached by a separate entrance. It is intended for the use of the school, and will accommodate about 100. Altogether, including this gallery, the building will accommodate about 700 persons. The entire cost will amount to about 3,000*l.*, and of this sum upwards of 2,700*l.* have been obtained.

Womenswould.—The ancient church of this parish having undergone a restoration, has been re-opened for divine worship. The walls have been restored, and the roof renewed. The east window has been filled with stained glass, the three lights being to the memory of the late incumbent, his wife, and his son respectively. The altar floor has been paved with Minton's tiles, and that of the other part of the building with uniform red tiles edged with black. The old high square pews have been superseded by open benches of deal, stained and varnished; and an altar-table, pulpit, and reading-desk, of similar material, have been erected. The cost of the work is about 1,100*l.*

Broughton Poggs.—The church of this parish (a very ancient one, dating, it is supposed, so far back as the tenth century) has lately undergone considerable repairs and alterations. It has been reseated with stained deal benches. Two stained glass windows, manufactured by Messrs. Heaton, Butler, & Bayne, of Covent-garden, have been placed in the east end, one at the left hand, representing the "Fall," with the words, "As in Adam all die;" the other at the right hand, the Marys at the empty sepulchre, with the words, "In Christ shall all be made alive." We are informed that the windows have been inserted by surviving members of the Goodenough family, in memory of their ancestors who have lived and died in the parish. The last addition to the church is a small organ, of four stops, built by Messrs. Bryceson, Brothers, of London. The cost of the organ was 50*l.*

FROM SCOTLAND.

Edinburgh.—It is in contemplation to have a rotary steam-engine in Edinburgh for street-cleaning and other purposes. The gearing and machinery are to be very light, moving upon one directing and two supporting wheels. The city being built up a long ridge, having a continuous incline from Holyroad to the castle, the draught for horses in the "fulzie" wagons is frequently at present too heavy.——The Edinburgh engravers on wood recently met for the purpose of forming a society for the advancement of their art. The profession was largely represented, and it was unanimously agreed that such an association should be formed. A code of laws was drawn up, and office-bearers for the present year chosen. These were — Mr. J. M. Corner, president; Mr. R. Paterson, vice-president; Mr. T. Robertson, secretary; and Mr. G. Morrison, treasurer.

Glasgow.—It is proposed to erect a Masonic hall in Glasgow at a cost of about 15,000*l.*——At a recent meeting of the Glasgow Philosophical Society, Dr. Gairdner delivered an address "On Defects of House Construction in Glasgow as a Cause of Mortality." He reviewed the evils arising from overcrowding, which has been repeatedly adduced as one of the most prominent causes of the lamentably high death-rate in Glasgow.

"The first consequence," as he remarked, "was enormous liability to epidemic disease, and not only to epidemic disease but to consumptive disease and various diseases of the lungs; and, further, an enormous rate of mortality in young children in particular—partly of course from epidemic disease—but partly also from the great number of other diseases, nervous diseases, convulsions, hydrocephalus, and tubercular diseases of the abdomen, and various other kinds of diseases which were known to be very destructive to infantile life. That he regarded as the primary and most obvious consequence. The second consequence was that, living in this state of habitual overcrowding, the sense of decency was injured inevitably, and ultimately it was lost utterly. The third consequence was, that almost inevitably a craving for alcoholic stimulants was generated, due to the want of all those natural stimulants which went with us all to make up the idea of domestic comfort. . . . . The fourth consequence of this state of overcrowding in badly-constructed houses was a great degree of moral degradation and of religious apathy."

The lecturer then prescribed the remedy, and pointed out the essentials in house-construction necessary for the preservation of health and morality. These included, chiefly, adequate space in sleeping apartments, the proper separation of the sexes, judicious ventilating arrangements, facilities for cleanliness, and such like.

Kirkcaldy.—At Mr. Douglas's works at Dunnikier Foundry, a steam-roller, specially designed for consolidating the road metal upon a number of great highways now in course of construction in the East Indies, has been made. We should like to hear oftener than we do of the construction of such rollers for our British roads as well. The machine comprises a 12-horse power engine.

Wick.—A terrible storm has raged at Wick. The wind threw up prodigious waves, which demolished a large portion of the new harbour works, and entirely destroyed the staging. The gale blew with terrific violence. The sea struck

in prodigious mountains against the new harbour; rose again several hundred feet above it, and then came across the bay, like a huge bank of fog. The harbour was thus entirely hidden.

Blackford.—Some time ago a number of the influential inhabitants of this village set themselves to bring in a supply of water, and after considerable exertions they have at length been successful. A reservoir was made in a field on the farm of Kimpunch, about a mile from the village, where there was a good and plentiful supply of spring water. Pipes were laid, and public wells erected along the sides of the streets. The inauguration of the supply has just taken place.

Glasgow.—Public attention has of late been called to the excessive mortality now prevailing in Glasgow; and although the exact cause is not quite known, it is held to be to a considerable extent consequent upon the operations of the Union Railway Company and the City Improvement Commissioners who are engaged in demolishing some of the more densely-populated districts, without providing at present adequate accommodation for the persons evicted. The necessity for a scheme to provide additional accommodation for the poorer classes by the erection of houses on the English model-dwelling plan, has engaged the attention of several influential gentlemen in Glasgow. In August last a meeting was held for this purpose, and Mr. Thomas Corbett, of London, guaranteed a contribution of 2,000*l.*, with the further offer, if the proposal should be favourably received, of a large additional sum. Bailie James Watson also agreed to hand over 1,000*l.*, Bailie Salmon 1,000*l.*, and Mr. John M'Gavin 1,000*l.* It was calculated that about 30,000*l.* would be necessary to give the scheme a fair trial, but up to this time no action has been taken. Mr. Corbett, however, a short time since communicated with Mr. Hugh Barclay, architect, requesting that he would arrange for the erection of four self-contained cottages in the neighbourhood of the city. Suitable ground was obtained at Whiteinch, and the erection of the cottages is now far advanced. These cottages consist of a ground floor, having a large kitchen, with scullery, a bed-room or sitting-room, and a water-closet; and in the attics two good bed-rooms,—in all four rooms. The cottages cost each about 150*l.*, with a ground-rent of 1*l.* 10*s.*, and the yearly rent will be about 10*l.* There have been already between seventy and eighty applicants for them. Mr. Corbett intends to put up other thirty similar cottages, but the site for them has not yet been fixed upon.

Books Received.

Collection of Epitaphs from the Ancient Church and Burial Grounds of St. Pancras, Middlesex. By FREDERICK TEAGUE CANSICK. London: J. Russell Smith.

We have delayed noticing Mr. Cansick's little book with the intention of supplementing it with some notes in our hands of the old church of St. Pancras. Pressure of other matter, however, has prevented this. Let us briefly say, then, that the author, seeing the destructive operations that were going on in the burial-ground of his native parish, has devoted many of his spare hours to recording the principal inscriptions to be found there, and in the church of St. John the Baptist, Kentish-town. It was a worthy work, and seems to have been performed with conscientious care. The success of the book, we are glad to hear, has so far exceeded the author's expectations, that he intends to proceed at once with the next volume, which will contain ancient and modern epitaphs from the six following cemeteries in St. Pancras:—Highgate, St. George's (Bloomsbury), St. George the Martyr's, St. Andrew's, St. Giles's, St. Martin's, St. Aloysius's Chapel, Foundling Chapel, and New St. Pancras Church.

Mr. Cansick seeks to become the Old Mortality of Middlesex, and we shall rejoice if he find imitators in other counties. Many of the epitaphs in his St. Pancras volume have an historic value.

In speaking of the epitaph on the tomb of William Woollett, the engraver, he mentions that the following lines, now defaced, were written on the tomb in pencil,—

> "Here Woollett rests, expecting to be saved;
> He graved well, but is not well engraved;"

and thinks it not improbable that these led to the monument to Woollett erected by subscription in the cloisters of Westminster Abbey.

VARIORUM.

We have before us several works on Domestic Architecture, which will receive due attention before long. Meanwhile we mention the titles of two of them:—"English Country Houses: Forty-five Views and Plans of recently-erected Mansions, Private Residences, Parsonage-houses, Farmhouses, Lodges, and Cottages; with a Practical Treatise on House-Building." By William Wilkinson, Architect, Oxford (Jas. Parker & Co.); and "Picturesque Designs for Mansions, Villas, and Lodges, with Decorations, internal and external, suitable to each Style. Illustrated by about Five Hundred original Engravings." By C. J. Richardson, Architect, author of "Old English Mansions," &c. (Atchley & Co.).——The first part has been issued of "Picturesque Architectural Studies," by William Young, architect, author of "Picturesque Examples of Old English Churches." It will be fair to wait the appearance of another part or two before expressing an opinion of the work.——Messrs. Chapman & Hall have issued a fine work, "The Arts of the Middle Ages and at the Period of the Renaissance," by Paul Lacroix, an account of which we shall, of course, give our readers. The illustrations are profuse, and include nineteen chromolithographs.——The eighth edition has been published of "Every Man his Own Lawyer" (Lockwood & Co.). This is a handy book of the principles of Law and Equity, comprising the rights and wrongs of individuals. The author has sought—

> "to point out to those who consult it how to seek and obtain redress for every injury and wrong: how to substantiate their rights: how to buy or sell an estate, a house, a ship, a horse, or any other thing: how to enter into contracts of all kinds, and with all persons: how to hire and let farms, houses, lands, and tenements: how to enter into agreements: how to take and give warranties, guarantees, notices, &c.; and to perform, in a legal manner, all such every-day transactions. And although it is not always, nor in every transaction, that the services of a solicitor can be dispensed with, still it is believed that many a *six-and-eightpence* may be saved, many a wrong redressed, many a right reclaimed, many an evil abated, many a lawsuit avoided, and many an individual saved from heavy expenses, and, in some instances, from ruin and misery, by a careful consultation at home with the pages of this Treatise."

——*The Photographic Art-Journal*, illustrated with photographs printed in permanent pigments (S. Low, Son, & Marston), has a good intention, and may be made an interesting, perhaps valuable, serial; but why, in the name of common sense, not to say honesty, take the name that belongs to another? The *Art-Journal* has made a position, and so others seek to trade on its name. This is always going on: "*Punch* is a success, so we will start a similar paper, and call it *Punch-and-Judy*." The eminent publishers of the *Photographic Art-Journal* could scarcely have given this point a thought.——The current *Fraser* contains Professor Tyndall's discourse on Dust and Disease, to which we have before made reference. Under the heading Reciprocal Duties of State and Subject, the editor, Mr. Froude tells some weighty truths which demand consideration.——"Debrett's House of Commons and the Judicial Bench, 1870," just now published, contains 1,000 armorial bearings. Most of the information has been furnished by members themselves, and the editor groans over the illegible manner in which much of it was supplied. He says,—"Indeed, in several instances where the proofs were altered, the corrections could not be deciphered by the most able expert." The illegible writing in which many persons indulge at the present day is an insolence that ought to be protested against on every possible occasion. There are secretaries of public companies who sign their names so that it is quite impossible for any person unacquainted with the signature to read it; and they do this persistently, and with the knowledge that it is unreadable. If we had the power of influencing their directors, they should at once be discharged from their office as being obviously unfit for it. Every man who writes at all can write his name so that it may be read, if he please, and it is an insolent waste of other people's time and attention when he does otherwise.

Miscellanea.

Wire-Rope Tramways.—It appears that the method of transport by wire-ropes which was tried on an experimental line near Leicester last year has made considerable progress since that time. Thirteen lines, varying from short distances to four miles in length, have been constructed, and upwards of 100 miles are in course of preparation or under contract.

Royal Literary Fund.—The annual general meeting of the members of this corporation was held on Wednesday, Earl Stanhope, the president, in the chair. The treasurer's report, read by Mr. W. H. Harrison, showed that the permanent fund, which at the commencement of last year consisted of 27,000*l.* Consols, has produced in dividends the sum of 810*l.* During the year a legacy of 3,000*l.*, bequeathed to the institution by Mr. Thomas Brown, has been received and invested. The permanent fund, therefore, now amounts to 20,238*l.* 17*s.* 3*d.*, producing an annual dividend of 907*l.* 3*s.* 2*d.* The stock of the Newton property consists of 8,167*l.* 15*s.* 10*d.* in the 3 per Cent. Reduced, producing an annual dividend of 245*l.* 0*s.* 8*d.* The Newton estate, at Whitechapel, has produced in rents, during the year, the sum of 285*l.* The president, in moving a vote of thanks to the honorary registrars, treasurers, and auditors, said in regard to the augmentation of their funds, a great deal depended upon the result of their anniversary dinners, and upon a judicious choice of a chairman. The chairman had always been chosen without reference to party politics, and had sometimes been represented by members of the Church, the Law, and the State, the especial object of the council being to take care that the responsible post should be filled by a nobleman or gentleman of undoubted merit and popularity. He thought they had been successful in selecting for the next anniversary one who realised the picture he had drawn,—he alluded to Lord Dufferin. Mr. Godwin took occasion to allude to the extraordinary largeness of the grants which had been made in the past year. In the year 1868 there were thirty-nine cases relieved, and the total amount was 1,350*l.*; in the year 1869 there were fifty-seven cases relieved, and the total amount was 2,255*l.*, which was the largest sum they had ever distributed in the same space of time. A cordial vote of thanks was then passed to Mr. Octavian Blewitt, the secretary.

Women's Club and Institute.—On Wednesday evening the first annual meeting of the members and friends of this institution was held in the drawing-room of the club, Newman-street, Oxford-street, under the chairmanship of Mr. Hodgson Pratt, who delivered a stirring introductory address, pointing out that the society was likely to be the precursor of many others, not only in London, but in the large towns of the provinces. He hoped to see engrafted on them funds to assist women during temporary sickness, or withlo ans to help them into businesses adapted to their taste and abilities. Such undertakings as this had a strong claim to the sympathy and active support of the affluent, and he recommended that prizes should be established as an inducement for women to write papers illustrative of the mental and material capacities of their sex, and the best mode of developing them. The report, which was unanimously adopted on the motion of Mrs. M. Bere, states that the club was opened on the 15th Feb., 1869. During the subsequent twelve months 260 members joined, and the number is gradually on the increase. Of the total number, 137 are known to be engaged in maintaining themselves in varions branches of business, some as artists, teachers, &c., but the occupation of the remainder is unknown, though some are ladies of private means, who visit the club occasionally to render valuable assistance by recommending to employments, or doing friendly services in some other way.

Stamps on Building Leases.—In the House of Commons, the Chancellor of the Exchequer, in bringing in the Bill on this subject, said that having considered what had been urged in relation to this matter, he thought it would not be just to insist on the limit of the indemnity he at first proposed. He therefore now only made it a measure applicable to the future, and should insert a clause by which stamps on building leases would be 10*s.* instead of 35*s.* Leave was then given to bring in the Bill.

Government and Science.—Replying to Mr. Samuelson, in the House of Commons, Mr. W. E. Forster announced that Earl de Grey intended to advise her Majesty to issue a Commission to inquire into the aid given to schools of science, and to consider whether such aid could be given with better advantage. The question of the amalgamation of the Jermyn-street and Oxford-street schools with the new School of Science at South Kensington would come within the scope of the inquiry.

Thames Mud, and what London Butter is made of.—Dr. Muter, the analytical chemist, has been analysing our London butter, and he finds that some of it, at least, is not made of that "nasty scum" which *occasionally* flats on London milk after it has stood for two or three hours; and this is, no doubt, so far, satisfactory to Londoners, if not to others. Much of it, on the contrary, now appears to be made of a pure, rich, and buttery grease, which is extracted from Thames mud! A sample of this useful article has been examined. It was derived from the mud at Battersea, and is of a yellowish tint, "very like" butter in appearance, taste, and smell; and what more can a Londoner require, if it be nutritious, as it no doubt is? Of course, the nature of it and the method of obtaining it are chemists' secrets. Mud in itself, as consisting of particles of inorganic matter, such as flint, granite, sand, clay, or wood, reduced by attrition, and mixed with water, can yield nothing of a nutritious character, as the *South London Press*, in announcing the discovery, remarks; but please to observe that there are exceptions to every rule; and the clay upon which certain savages feed must be an exception here; as also the wood out of which, some years ago, it was proposed to make bread for starving families. The silicates of potash and soda, or oil of flints, are greasy, and when in solution have a gelatinous appearance; but this is not quite what we get from the rich and valuable mud of the Thames. Peat is a more likely source, as it yields paraffine, and also stearine, and analogous bodies; but it is still more likely that the mud of the Thames is impregnated with real fatty matter, the refuse of manufactories, of ships, and derived from dead dogs, human bodies, and various other sources. One thing is certain, it seems,—the manufacture of this grease from Thames mud has been going on for a long time, and quantities of it are shipped weekly to Holland, where much of our "fine dairy butter" is "manufactured," in more senses than the agricultural one.

Concrete Buildings, Wales.—A correspondent says:—"It is worth while to visit the farmstead of Dolmalinny, in the parish of Tregynon, to inspect the farm buildings erected thereon by the Hon. H. Hanbury Tracy. When you enter the farmyard, you come to a range of cow buildings built of 12-in. concrete, the roof of which is made of concrete slabs, 3½ in. thick, the rafters ⊤ form, 12 ft. long, without any tie-beam. The ground on which the building is erected being very unlevel, the interior is all arched, so that the cow-house and calves' kit stand on arches underneath, which are intended for young cattle. The Bing core, *Busy*, and stalls are all concrete; in fact, the cows are tied to a concrete wall, the floors being all of the same material. The next building which will meet your attention is a stable for five horses erected of, and covered with, concrete. This building is on arches; the space underneath is intended for roots, &c. The manger is made of concrete, which, under the new system of feeding horses with damped provender is much preferable to wood. In the same range as the stable are the barn, the cartsheds with granary over, which are all of concrete, even to the barn floor and the division of the 'bay.' The cart-houses are arched, and the granary floor is of concrete, so that it is impossible for rats and mice, which are the pests of such places, to enter."

Lectures, Working Men's College.—The programme for the current term shows that the following lectures, free to all members of the College and Adult School, will be delivered:—Saturday, March 12, "Sir John Falstaff," by the Rev. Ll. D. Bevan, LL.B.; March 19 and 26, April 2 and 9, "Crystals," by Mr. N. S. Maskelyne, M.A.; April 23 (not settled); April 30, the "Science of Language," by Mr. Richard Morris; May 7, the "Theory of Proportion the Basis of all Formative Science;" and May 14, the "Science of Education as Founded on the Theory of Proportion.—The Education of the Workman," by Mr. W. Cave Thomas.

St. Silas's New Schools, Islington.—A public meeting has been held to celebrate the completion of the new schools belonging to St. Silas's district. The schools are situated in a neighbourhood where they are much required. They are calculated to hold 650 children. The basement floor is intended for the infants' school, the floor above for the boys, and the top story for the girls. The schools are fitted up with class-rooms, lavatories, and other conveniences.

Roman Wall, near Kustendje.—At the last meeting of the Newcastle Society of Antiquaries a letter was read from Mr. Henry Cullen, a physician at Kustendje, giving a detailed description of Trajan's Wall, which, he said, began at the edge of the cliff, about a mile distant from the town of Kustendje to the west, and ran across the country to Rasora. Like the Roman wall, it went up hill and down dale. It had now nearly disappeared, having been grubbed up by the Tartars for building purposes; but at the time when he first went to the place it was very extensive. It was about 6 ft. wide, and built of blocks of stone from 4 ft. to 5 ft. in length, and from 1½ ft. to 2 ft. wide. To the north of the wall, at about 100 ft. distant, and running parallel with the wall at an equal distance, was a rampart of earth still in good preservation, the slopes being defined, but no stone work being visible. At a short distance from the cliff there were the outlying walls visible of what must have been a large fortified building, about 100 yards; and about a mile distant from that, on the western side of the wall, was another such building. The writer's opinion was that the wall was not built by Trajan at all, but by Constantine. These ruins would seem to imply that the foe the fortifications had to defend the inhabitants from was to come from the Danube and the districts about its mouth, and that led him to the belief that the wall had been erected by Constantine to defend Kustendje,—the ancient Tomi,—against the Scythians and other barbarians.

Wurtemberg Schools of Industrial Art. After the Great Exhibition of 1851, drawing classes were added to all primary schools in Wurtemberg, in order to furnish manufacturers to compete with those of France. At first these schools were gratuitous, but it was soon found that attendance would be more regular if the parents of the children were required to contribute to the expenses in proportion to their means. The fees imposed vary from one shilling to one pound per annum. The teachers are, as far as possible, selected from amongst those workmen and employers belonging to the principal trades in each town who have themselves previously attended similar classes; the workmen thus transformed into teachers do not quit their ordinary occupations, but are paid at the rate of 3s. 6d. per hour for the lessons which they give. At Geisslinger there is a class with 180 pupils, under the direction of a mason or bricklayer. In many towns employers have so highly appreciated the instruction given in these classes that they themselves send their young workmen and apprentices to attend them. It has been found that artists of acknowledged talent have not succeeded so well as artisans in the conduct of these classes. Great attention has been paid to the provision of copies and models for these special schools, which include lithographs, plaster casts, and wooden models. Collections of these were shown at the Universal Exhibitions, in London in 1862, and in Paris in 1867.

Houses Unfit for Human Habitation.—A number of summonses as to a pestiferous neighbourhood have been heard at the Woolton Petty Sessions. The summonses were issued at the instance of the Wavertree Local Board, against owners of property in Rose-lane, Wavertree, for permitting a nuisance to exist on their premises, the said nuisance being described in the summonses as "an offensive cesspool, accumulation of water and sewage, soil saturated with sewage, and offensive sewage overflowing into the adjoining premises, arising from defective drainage and want of paving." Evidence for and against was heard, and the magistrates having consulted together for a short time, Mr. Gibson said they had come to the unanimous conclusion that the houses were unfit for habitation. Their decision, therefore, was that these houses be closed until the nuisance was abated.

The Visitation and Relief of the Poor. Mr. Henry Pownall, the chairman of the Middlesex magistrates, has issued a pamphlet advocating some important reforms in connexion with the visitation and relief of the poor. He recommends a much greater distinction to be made, in poor-houses, between the aged poor and the able-bodied, and that greater facilities should be permitted for the relatives and friends of the former to visit and bring them presents. He also recommends, with us, that the poor-rates should be raised by *national* taxation in equable proportions, and that the laws of settlement should be altered.

The Liverpool Gas Company's New Offices.—The erection of the new office buildings required by the Liverpool Gas Company, in consequence of their present premises in Newington, having been purchased for the central railway station, has just been commenced by the contractors, Messrs. Jones & Son, of Liverpool. Some time ago the Gas Company purchased from the corporation the building in Cornwallis-street, formerly occupied as the Public Offices, together with adjoining land, the entire area being upwards of an acre; and it is on a portion of this land that the company's new buildings are about to be erected. The designs for the new edifices, which will occupy about 1,160 square yards, have been furnished by Messrs. Lucey & Littler, architects; and the works will be carried out under their superintendence. The main elevation of the building, which is in Italian style, will front Duke-street. The interior will be very large and commodious, and will contain every requisite for carrying on the business of the company. Next year the railway company take possession of the Newington premises.

Dock Extension.—A fine dock, in extension of the East and West India Company's system, was opened at Poplar last Saturday. The river from Blackwall to Limehouse describes a horse-shoe curve, and the South Dock (by which name the new property is to be known) runs in a straight line from point to point. There are 33 acres of water in the new dock, and four pairs of gates, through which entrance can be obtained from either end. The main lock is 300 ft. long, 55 ft. wide, and 30 ft. depth at high tide, and it leads in the first place to a basin of six acres in extent. On the north, or export side, there is a mile and a quarter of quay frontage, with sixteen jetties. The total length of quay is three miles. Warehouses are built, or building; two of them for the storing of jute, and others for tea, coffee, rice, &c. A railway, bringing the dock into connexion with all parts of the country, will be laid down along the quay. After luncheon, the chairman of the East and West India Dock Company, Mr. Kemshead, incidentally stated that the company had been in existence seventy years, during which time three docks, representing something like 80 acres of water, had been opened. Mr. Hawkshaw complimented Mr. Wythes, the contractor, upon the good quality of the work.

Accidents.—The wall on the side of Main-street, Rotherham, abutting on Mr. Nightingale's garden, is of considerable depth, and the pressure upon it from the great traffic along this thoroughfare has proved too much for its strength. A portion of the wall, perhaps to the extent of some ten or twelve yards in length, and to a considerable depth, as well as part of the pathway, have given way and fallen into Mr. Nightingale's garden. The wall, we believe, was built by the South Yorkshire Railway and River Dun Company.——The ruins of the old Manor at Sheffield are now rapidly crumbling away. During the past few weeks considerable portions of the wall have fallen, and other and still larger portions are expected at any moment to follow them. The old structure is of historical interest.——The Italian papers contain particulars of a melancholy accident which has just taken place at Sienna. A meeting was being held of a working men's benefit society, at which about 300 members were present. On a sudden the floor of the room gave way, and nearly all the persons present fell with it to the floor beneath. More than eighty were injured, twenty of them severely, and two were killed.

A Failing Court.—Business in the Supreme Court at Hong Kong was brought to a rather sudden termination on January 11. According to the *Times of India*, after the judge had taken his seat, a report was handed to him from the chief engineer, saying that the building was unsafe. The judge, we are told, at once adjourned the court *sine die*, remarking that he did not wish to listen to any long arguments on the report, but would take it as proved. O! wise young judge!

Value of Property in Leeds.—The freehold house and shop occupied by the late Mr. Cross, bookseller, Commercial-street, was offered lately for sale. The premises have a frontage of 43½ ft. to Commercial-street, and cover an area of 114 square yards. They were knocked down to Mr. Wedderburn, of Moor Allerton, for the sum of 2,920*l.*, being at the rate of about 25*l.* 12s. per square yard. In 1860—exactly ten years ago—this property was bought for 1,080*l.*

Printers' Pension, Almshouse, and Orphan Corporation.—The annual meeting of this institution was held on the 7th inst., at the London Tavern; Sir Joseph Causton in the chair. Mr. Hodson, the secretary, read the report, from which it appeared that there were now seventy-eight pensioners upon the fund. The twenty almshouses were all occupied, and five orphans were now in charge of the corporation, and placed out at boarding-school. The litigation respecting the bequest left by the late Mr. Biggs for granting annuities to decayed printers or their widows had been closed, and the committee of the corporation who were the medium through which the annuities were granted, had received the sum of 3,810*l.* from the Court of Chancery. The total income of the Pension Society for the year had been 2,532*l.*, and, including 1,053*l.* paid to pensioners, 700*l.* invested, and 256*l.* transferred to the Almshouse fund, the expenditure had been 2,864*l.*, leaving a balance of 168*l.* The invested fund was now 13,324*l.* The legacy of 2,000*l.* from Mr. Wright, and the subscriptions of 1,000*l.* for building a new wing to the Almshouse at Wood-green, had been invested.

The Fund for Archæological Excavations at Rome.—The treasurer's report, July 1 to December 31, 1869, has been issued in a printed form. It gives a list of the discoveries made, and says in conclusion:—

"The 'Roman Exploration Fund' is now a *British Fund*, in which name we include our American cousins, and the other descendants of the *British race* in the colonies; and we hope to show that the *British race* can do as much for the cause of history as the French and the Germans have done and are doing. We cannot indeed compete with the noble work of the Emperor of the French, in buying the land and leaving the excavations open: that could only be done by the Government, who could easily make a second Pompeii in the southern part of Rome. We cannot expect such discoveries to be made every year, but we hope to confirm and prove what we have discovered, and to be able at the end of the season to give a good account of our stewardship."

The subscription list for the half-year amounts to 558*l.* 2*s.*; there was a deficit on July 1 of 122*l.*; and the balance on hand, January 1, 1870, was 435*l.* 19*s.*

London Labourers' Dwellings Society (Limited).—At the seventeenth half-yearly general meeting of the company, held last Monday,—Mr. Richard Foster in the chair,—the report of the directors for the six months ending December 31st was presented and adopted, and the usual dividend at the rate of 5 per cent. per annum, free of income-tax, was declared. The capital of the society now amounts to 42,200*l.*, the sinking fund (for the redemption of the leasehold property of the society) to 1,350*l.*, and the reserve fund (for the equalisation of dividends, or extraordinary expenses) to 4,093*l.* Of this last sum 2,000*l.* are deposited at interest, in order to provide the means of purchasing temporarily at par any shares that a member may from unforseen circumstances wish to realise.

Pier and Promenade, Portobello, near Edinburgh.—The Portobello Pier Company have accepted jointly the tenders lodged by Mr. J. Waddell, contractor, Bathgate, and Messrs. John Stewart & Son, engineers and ironfounders, Irvine, for the construction of the new pier. The estimates include the erection of a large saloon on the jetty, at the seaward extremity of the pier. Fourteen offers were lodged—seven for the pier and seven for the saloon—including tenders from some first-class engineering firms in England. The conjoint estimates amount to upwards of 6,000*l.*, and the total outlay in connexion with the pier will be met, it is anticipated, by the capital authorised to be raised by the company, viz., 7,000*l.*

Death from Gas Water.—Last week the bodies of a man, his wife, and three children were taken to the Central Police-station at Hull. The man was the captain of the "keel" *Sarah* of Goole, and had been taking in gas-water at the Central Gasworks. The fumes from the gas-water proved fatal to the whole family. The mother called out to the husband that one of the children was dying; he went to see, and in ten minutes all were found dead in the cabin. It is only when some shockingly immediate result such as this comes before the public that people will believe that what is invisible may nevertheless kill.

Surveyor to the Kingston Highway Board.—Mr. James Bateman, late an officer under the Islington Local Board, has been elected surveyor to the Kingston Highway Board district.

The Royal Society.—Sir Edward Sabine, the president, has given his first *conversazione* this season, at Burlington House, when a large number of distinguished persons were present. The visitors began to arrive at nine o'clock, and were received by the president, attended by the vice-presidents and principal officers of the society,—Dr. W. A. Miller (treasurer), Dr. Sharpey and Professor Stokes (secretaries), and Professor W. H. Miller (foreign secretary), in the entrance saloon. The several rooms thrown open were filled with a great many models of inventions and instruments relating to improvements in science.

Fire, and Destruction of Workmen's Tools, &c.—A destructive fire occurred on Saturday, the 5th inst., on the premises of Mr. W. F. Stanley, mathematical instrument manufacturer. Fortunately it extended to the cabinet workshops only; but the tools of eight workmen were destroyed, as well as several hundred instrument cases, cabinet work in hand, and a large quantity of material.

Marbles from Vermont, U.S.—Our attention has been called to some fine specimens of richly-veined marble from quarries on the shores of Lake Champlain, in the State of Vermont, having direct water communication by the Hudson River with New York. They were exhibited at the Institute of Architects, by Mr. A. Mason, of Russell-road, Kensington, and are worth attention.

New Lighthouse at Port Said.—The Egyptian Government, in order to better protect ships entering Port Said for the Suez Canal, have just constructed a lighthouse at the entrance to the port. The new light is a flashing one, flashing every three seconds, and the illuminating apparatus is electric of the first class. The tower, which is built of sand and cement, is of a light grey colour.

The Halifax Workhouse Infirmaries.—The new infirmaries at the Halifax workhouse have been inaugurated by a grand banquet, given by the chairman of the Board. The new infirmaries are erected on the pavilion plan, and provide accommodation for 72 males and 72 females.

Surveyor to the Board of Works.—It will be seen in our advertising columns that the Metropolitan Board of Works propose to elect a surveyor to deal with questions under the Building Act, line of frontage, and so forth, at a salary of 250*l. per annum*, rising gradually to 300*l.*

The late Mr. Moses, Engraver.—The *Times* obituary records the death of the eminent engraver, Mr. Henry Moses, on the 28th of February, at his residence, Lincoln Villa, Cowley, Middlesex, aged 88 years and 9 months.

TENDERS.

For building an infirmary for the Guardians of St. George's-in-the-East. Mr. Andrew Wilson, architect:—

Gill	£21,725	0	0
Hart	20,233	0	0
Hearle	20,119	0	0
Holmes	19,690	0	0
Winship	19,645	0	0
H. & J. Johnston	19,250	0	0
Hill & Co.	19,194	0	0
Perry & Co.	19,124	0	0
Mortar	18,991	0	0
Crabb & Vaughan	18,950	0	0
Wicks, Bangs, & Co.	18,900	0	0
Killby	18,757	0	0
Capps & Ritso	18,746	0	0
Ennor (accepted)	18,720	0	0

For new fever wards, Hungerford Union, Berks. Mr. J. H. Money, architect. Quantities not supplied:—

Wheeler	£698	8	11
Whiter	673	10	0
Cruse	664	0	0
Dyer	611	0	0
Hoskings	610	0	0

For rebuilding No. 79, North-road, Brighton, for Mr. Spencer Weston. Mr. J. Dallimore, architect. Quantities supplied:—

Garbutt	£675	0	0
Parsons (too late)	647	0	0
Elliott	645	0	0
Barnes	630	0	0
Gates	625	0	0
Holloway	570	0	0
Blackmoor (accepted)	512	9	5½

For premises at Witham, for Messrs. Johns. Mr. Chas. Pertwee, architect:—

Byatt	£1,260	10	0
Fincham	1,045	0	0
Brown	930	0	0
Gozzett	902	0	0
Gardner	850	0	0
Choat & Son	833	10	0
Roper	830	0	0
Sudbury	800	0	0
Saunders	730	0	0
Crabb & Letch	728	0	0

For enlargement of Orsett Union House. Mr. Chas. Pertwee, architect:—

Hall	£2,109	2	0
Larkin	1,965	0	0
Fergusson	1,900	0	0
Clements	1,850	0	0
Brown	1,844	0	0
Place	1,820	0	0
Nightingale	1,818	0	0
Fincham	1,783	0	0
Blake	1,770	0	0
Davep	1,700	0	0
Withers	1,630	0	0

For building four houses at Westgate Bay, near Margate. Mr. C. N. Beazley, architect:—

Smith & Swain	£3,163	0	0
Gascoigne & Goddard	3,075	0	0
Hollis	3,000	0	0
Wigmore	2,500	0	0
Whittaker	2,250	0	0

For new wings to Old Ealing House Girls' Refuge. Messrs. E. Habershon & Brock, architects:—

Sharpington & Cole	£2,303	0	0
Nightingale	2,182	0	0
Ebbs & Son	2,176	0	0
Carter & Son	2,098	0	0
Scrivener & White	2,043	0	0
Manley & Rogers (accepted)	1,877	0	0

For detached residence, No. 3, on the Yew Bank Estate, Kenley, Surrey. Mr. Charles Rutley, architect. Quantities by Messrs. H. Blackwell and F. Rutley:—

	Suffolk	Facing Extra.
Regis	£1,896	£34
Waters	1,779	40
Staines & Son	1,775	35
Goodman	1,749	35
Garrud	1,723	24
Hockley	1,700	33
Hearle	1,694	33
Lose	1,677	25
Gover	1,675	40
Gibson	1,590	28
Pesket & Taylor	1,575	40
Harrison & Edwards	1,550	30
Blackmore	1,495	16
Furgison	1,418	25
Johns	1,397	30

For new station at Hackney, for the North London Railway Company:—

Baylis & Ramage	£15,600	0	0
Snowdon	15,495	0	0
Winship	13,950	0	0
Myers & Son	13,783	0	0
Gjll & Fairbrother	13,740	0	0
Mansfield & Price	13,372	0	0
Hill & Keddell	13,369	0	0
Killby	12,990	0	0
Turner	12,970	0	0
Axford	12,910	0	0
Farquison	12,580	0	0
Crabb & Vaughan	12,494	0	0
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HOLBORN UNION.—CLERK of WORKS.—WANTED, a thoroughly efficient CLERK of Works, to superintend the erection of a block of buildings at St. Luke's Workhouse, City-road. Salary 2*l.* 10*s.* per week. Applications, stating age and former engagements, accompanied with testimonials, not more than three, to be sent in to this Office, not later than the 15th day of MARCH instant, addressed to the Guardians of the Holborn Union, marked outside "Application for Clerk of Works."—Further particulars may be obtained by application to Mr. FNELL, Architect, 36, Chancery-lane.—By order,

E. W. JAMES, Clerk to the Guardians.

Clerk's Office, Workhouse, Gray's-inn-road, March 2nd, 1870.

METROPOLITAN BOARD of WORKS.

To ARCHITECTS and SURVEYORS.—The Metropolitan Board of Works REQUIRE the services of a SURVEYOR in the department of the Superintending Architect, to perform the duties connected with applications and questions arising under the Building Acts, and under the clauses of the Metropolis Local Management Acts relating to lines of frontage of buildings, and the formation of streets. Candidates for the appointment must be duly qualified as architects and surveyors, and should possess experience of official business. The salary will be 250*l.* a year, increasing by annual instalments of 10*l.* until it reaches 300*l.* A statement of the duties to be performed, and any other information required, may be obtained on application in the Superintending Architect's Department at this Office between the hours of NINE a.m. and FOUR p.m. or on SATURDAYS between the hours of NINE a.m. and TWO p.m. Application in writing, stating the age of the candidate, and accompanied by testimonials and evidence of competency, should be addressed to the Clerk of the Board. No application will be received after TEN o'clock on WEDNESDAY, the 16th inst.—By order,

JOHN FOLLARD, Clerk of the Board.

Spring-gardens, 8th March, 1870.

PUPIL.—An ENGINEERING and LAND SURVEYOR, who also has a public appointment at Great Grimsby, has a VACANCY for an ARTICLED PUPIL. Premium required.—Address, X. Y. Z. Mr. Eden's, Bookseller, Great Grimsby.

ST. MARY, ISLINGTON.—HIGHWAYS DEPARTMENT.—The Vestry being about to APPOINT a FOREMAN of ROADS for the North-Eastern District of the Parish, at the weekly wages of 30*s.* the Highways Committee will meet at the VESTRY OFFICES, in Upper-street, on WEDNESDAY, the 23rd Instant, at HALF-PAST NINE o'clock in the Morning, to receive applications from candidates. Applications, in the applicants' handwriting, together with testimonials, to be sent to this Vestry-offices not later than the 22nd inst. Information as to the duties may be obtained, at this Office, of Mr. H. CORMACK, from TEN till ELEVEN o'clock a.m. up to the 22nd instant. Candidates to be in attendance at the Meeting of the Committee. The Vestry will not allow any travelling or other expenses to any of the candidates.

JOHN LAYTON, Vestry Clerk.

Vestry-offices, Upper-street, Islington, N. 10th March, 1870.

SPAIN.—The SERVICES of any one knowing Spanish thoroughly are required. If with a knowledge of engineering preferred.—Address, 743, Office of "The Builder."

TIMBER TRADE.—EAST and WEST COAST.—TRAVELLER WANTED.—Preference given to one with a good connexion in Yorkshire and Midland Counties, also in Wales, and accustomed to sell Baltic woods chiefly, also mahogany. None need apply but those of undoubtedly good character and ability, to whom an adequate salary, would be given.—Address, with references and all particulars, R. H. D. Office of "The Builder."

WANTED, in the Country, for a permanency, a competent BUILDER'S CLERK and ASSISTANT. Must be a good bookkeeper, accountant, and draughtsman, able to take off quantities, set out and measure up work in all the branches, and have a thorough knowledge of the trade. Good references will be required.—Address, stating terms, to C. B. Post-office, Ongar, Essex.

TO PLUMBERS, GLAZIERS, AND DECORATORS.

WANTED, a thoroughly practical Man, in the above branches, as a WORKING FOREMAN. Must be highly respectable, steady, active, persevering, and well used to management. None other need apply. The highest references will be required. A country man preferred.—Apply, stating wages, age, &c. to E. M. Post-office, Abingdon, Berks.

TO JOURNEYMEN GLASS STAINERS.

WANTED, a FEW GOOD HANDS.—Apply to JAMES BALLANTINE & SON, Edinburgh.

TO CARPENTERS.

WANTED, to APPRENTICE.—A Gentleman is desrous of PLACING a YOUTH, aged 16, and who has already served two years in a workshop with a carpenter, and would be glad to receive offers from respectable firms, stating the premium required to board him during his apprenticeship.—Address, A. B. Gloucester Cottage, Hornsey-road, Holloway.

TO DECORATORS' FOREMEN.

WANTED, a GENTLEMAN of considerable experience and thorough business habits, possessing good taste, to TAKE the MANAGEMENT of the DEPARTMENT in a high-class establishment. A liberal salary offered to a suitable person having undeniable references as to capabilities.—Apply, by letter only, giving name, with full particulars, to Mr. E. MARKS, 1, Brook-street, Grosvenor-square, W.

TO FOREMEN SMITHS.

WANTED, a thoroughly competent Man to take the general charge of FIREMEN and FITTERS. Should be conversant with Gas-fitting and Bill-handing.—Apply by letter, stating age, past employment, references, and wages required, to HART, SON, PEARD, & CO. Wych-street, W.C.

WANTED, a JUNIOR ASSISTANT in a Surveyor's Office at seaside. Perspective essential and quantities desirable. Applicants to enclose small scrap of drawing, and state age, experience, and salary, which must be only moderate, to HENRY BLOMFIELD, Esq. Post-office, Ramsgate.

TO GRAINERS.

WANTED, an experienced WORKMAN, for a Constancy. One who is a writer preferred.—Apply to SMITH BROTHERS, Northampton.

WANTED, an APPRENTICE, as an ARCHITECTURAL SCULPTOR.—Apply to Mr. JAQUET, Marble and Stone Art Works, Stanford-street, Vauxhall-bridge-road, and 24, Vincent-square, S.W.

WANTED, a steady, industrious FOREMAN, for a PLUMBER'S, HOUSE DECORATOR'S, and JOBBING BUSINESS. One who can assist in the management of ditto, take out quantities and dimensions.—Apply by letter, stating wages, where last employed, to TRADE, Lawless's Library, Philpot-lane.

WORKING FOREMAN to a HOUSE DECORATOR.—WANTED, a Man of thoroughly practical experience as above. A knowledge of plumbing necessary, and graining desirable.—Apply, by letter, stating age, qualifications, and wages required, to H. S. 15, Surrey-square, Old Kent-road.

WANTED, a CLERK, in the Office of a HOUSE DECORATOR, &c. Must be accustomed to the business. Hours, 6 till 6.—Address, stating salary required, A. B. care of Mr. Biggs, House Agent, &c. 248, Mare-street, Hackney, E.

WANTED, in the country, a good general GOTHIC DRAUGHTSMAN, well up in detail.—Apply, stating salary, age, hours, &c. to G. N. S. 30, Great James-street, Bedford-row, London.

WANTED, a SITUATION in a Builder's Office, by a Young Man, aged 23, who is desirous of improving himself. Wages not an object.—Address, L. E. A. Post-office, Stow-on-the-Wold.

TO BUILDERS, CONTRACTORS, &c.

WANTED, a RE-ENGAGEMENT, by a thoroughly practical and experienced GENERAL FOREMAN, the entire charge of a large job, in Town or country. Is thoroughly up to his duties in all branches. First-class references and testimonials.—Address, No. 712, Office of "The Builder."

TO ARCHITECTS AND SURVEYORS.

WANTED, a SITUATION, by a good and expeditious DRAUGHTSMAN and SURVEYOR. First-class references.—Address, W. RAMSEY, 36, Oberstein-road, New Wandsworth.

TO ARCHITECTS, &c.

WANTED, an immediate RE-ENGAGEMENT, by a really efficient GENERAL ASSISTANT, whose thorough and varied experience suits him to all classes and styles of architectural assistance, both to design and otherwise. Highest reference. Terms very moderate.—Address, W. F. F. 13, William-street, Camden-road, N.

TO ARCHITECTS, &c.

WANTED, by the Advertiser, aged 21, RE-ENGAGEMENT, as ASSISTANT in an Architect's or Surveyor's Office. Five years' experience.—Address, W. D. No. 103, Manor-street, Chelsea, S.W.

WANTED, a RE-ENGAGEMENT, as CLERK in a Builder's or Contractor's Office, by a Young Man, of active business habits and good experience.—Address, F. B. Mr. Holdway's, 2, Crawford-street, Warner-road, Camberwell New-road, S.E.

WANTED, a RE-ENGAGEMENT, by a thoroughly competent Man, as OUT-DOOR or SHOP FOREMAN.—Address, 448, Office of "The Builder."

WANTED, a SITUATION, as a FOREMAN, or MANAGER, of a Branch Business in the PLUMBING, GASFITTING, PAINTING, &c. Understands hot-water and iron-pipe work, &c. and has been foreman for a widow lady over three years. Testimonials as to character and ability.—Address, T. B. S. Post-office, Abingdon, Berks.

TO ARCHITECTS, &c.

WANTED, by the Advertiser, aged 21, an ENGAGEMENT as JUNIOR ASSISTANT. Neat draughtsman. Salary not so much an object as permanent employment and improvement.—Address, L. G. 16, Lyndhurst Grove, Peckham, S.E.

WANTED, STAIRS, by the Piece or Day SASHES and FRAMES, by Piece. In town or country. Good references.—Address, A. W. 13, College-hill, Thames-street.

TO ARCHITECTS AND BUILDERS.

WANTED, by a thoroughly practical Man, a SITUATION as CLERK of WORKS or BUILDER'S FOREMAN. Competent at first-class jobs. Joiner by trade. Aged 38. Good testimonials from large London firms and architects. Town or country.—Address, A. B. 23, Princess-street, Grove-road, N.W.

TO ARCHITECTS.

WANTED, by a good Draughtsman, competent to Prepare General and Detail Drawings, and quick at Designing, an ENGAGEMENT.—Address, ALPHA, care of Mr. Calcutt, Bookseller, Lower Tooting, S.W.

TO BUILDERS AND CONTRACTORS.

WANTED, a SITUATION as CLERK to the above. Thoroughly understands the routine of the office. Good references. Aged 22.—Address, BETA, care of Messrs. Terry, Stoneman, & Co. 6, Hatton-garden, London, E.C.

WANTED, a RE-ENGAGEMENT, by a practical BUILDER'S FOREMAN. Carpenter by trade. Reference good.—Address, J. T. 2*a*, Myrtle-street, Queen's-road, Dalston.

TO BUILDERS, CONTRACTORS, AND OTHERS.

WANTED, an ENGAGEMENT, by a good Joiner. Over 20 years' experience in London. Sashes and frames, boxing shutters, or any description of Joiners' work, by the piece, at moderate prices. Can give first class references as to ability, &c. Town or country.—Address, F. B. 42, Queen-street, Edgware-road.

WANTED, PAVING, Foot or Carriage-way, Kerb Setting, or Granite Dressing, to TAKE by the PIECE, by a first-class practical Man, of twenty-five years' experience under Dock, Railways, Metropolitan Boards, and Government Engineers. One trial.—Address, JAMES CRUTCHLEY, No. 7, James-place, North-street, Poplar.

The Builder.

VOL. XXVIII.—No. 1415.

Alexandria: Art and Despotism.

OR. the culture and development of the fine arts, which form of government, the despotic or constitutional, is the most favourable? This is a question which has been frequently discussed, and many plausible arguments have been advanced on both sides. On the one hand, it has been affirmed that enlightenment and education, and consequently taste, advance side by side with political freedom; that while men's minds are not convulsed by upward struggles towards the sun of liberty, and are unclouded by those apprehensions which constantly overshadow the enslaved, they are most open to receive impressions of truth and beauty in both nature and art; and that the enlarged appreciation of, and constantly increasing taste for, the beautiful, which is likely to take root and spread abroad amongst a people who are thus free from political cares, would induce their legislators to take the fine arts under their charge, make them a branch of national education, and foster them by every means in their power. As this state of things could only come about under a constitutional Government, that is evidently the most favourable for the culture and progress of the fine arts. It may be advanced also, in support of this view of the case, that art flourishes best in an atmosphere of truth; that undue favouritism, intrigue, plotting, and jobbery of all sorts are destructive to its growth; and it may be asked, where will you find greater freedom from jobbery than under a popular and liberal administration?

On the other hand, it may be asserted that refined taste does not necessarily accompany political ability and influence, and that under a liberal Government any man who is great upon the platform may be successful at the poll; and that, with a special talent of some kind and a great deal of boldness, he may even attain unto office, and to such an office that he may have the handling of his country's ornaments, her crown jewels,—architecture, painting, and sculpture; and that this man may be utterly destitute of taste, and incapable of sympathising with artists or of comprehending art of any description. Then it may be asked, would not such a man inflict irreparable injury upon art? Yet such a state of things is possible, and does occur in the most liberal countries and in the most enlightened period of the world's history. How, then, it has been demanded, can that form of government which admits of such a case be most favourable to the growth of the fine arts?

We must here beg our readers to remember that we are merely repeating what has been, or may have been, advanced on both sides of the question.

However much we may be of opinion that art and education ought to be developed together, we cannot but own that hitherto in the history of the world practical results show that the larger number of great works of art have been accomplished under despotic rulers, without the consent or concurrence of an enlightened people. In order to comprehend this apparent paradox, let us look at Egypt, covered with stupendous temples, surrounded by a series of sphinxes, and guarded by gigantic genii, all perfected under the most crushing of despotisms. The palaces of Persepolis and Nineveh were constructed under a similar condition of affairs. Let us go to Greece, and see the Parthenon, erected by Pericles after he had made himself master of the Athenians. Rome owes its Coliseum, its enormous baths, its triumphal arches, to the Cæsars, not to tribunes and decemvirs. Venice owes all its finest structures to the doges of the time of its oligarchy, not to the time of its democracy; and lastly, the two finest cities of ancient and modern times owe their grandeur to the magnificence of imperial taste.

Paris as it now stands, re-edified and rectified by Napoleon III. and his faithful Haussmann, is a splendid monument of imperial greatness—a vast Napoleon-ville, which will remind posterity of that remarkable man, who, having crowned the edifice, is content with simple dignity to resign the trowel into the hands of those whom he condescends to call his employers.

Alexandria, the city of the conqueror of the world, accomplished by his architect Dinocrates, was the glory of the Levant, and the greatest empire of the East,—a worthy memorial of Alexander the Great and of that architect who built the Temple of Diana at Ephesus, and who proposed to cut Mount Athos into a figure of his master, representing him with a city in one hand and a cup in the other.

Nevertheless, no one desires despotism in England. The tendency of our observations is simply to show the necessity for proper arrangements, under a liberal form of government, to insure attention to matters of art.

When Governments are compelled to economise by the pressure of public opinion, but are not in the same manner impelled to any large-mindedness, or even to common rectitude, in dealing with matters of art, evil results must follow; and the reason of this is that art and artists are so little considered by the community, that in the case of a public competition the selection of an inferior work by the judges is not believed by them to be an act of injustice to art and to competing artists, but rather a mark of cleverness on the part of those who have exerted themselves to bring about such a result for the benefit of a friend or dependent. No wonder, then, that Mæcenas enters the lists for the advantage of his *protégé*, and that it is thought a matter of little moment if the strawberry-leaves be tossed a little awry, the lawn slightly soiled, or the ermine a little ruffled in the tussle of unblushing jobbery that ensues. It is to be owned that this state of things is partly owing to the conduct of artists themselves, who often allow themselves to be made handles to a job. They write and talk about Beauty, Truth, and Sacrifice being the handmaids who surround the triumphal car of Art, and attend her on her progress, yet they would not hesitate to immolate Truth and Beauty and Art herself at the shrine of a patron who helped them to a job.

In England, as in France, there should be a department specially devoted to the advancement of the fine arts, and formed of men duly qualified by their attainments, their taste, and their experience to direct it.

The despot and his adviser have hitherto been the best friends to art. Pericles and Phidias, Alexander and Dinocrates, Justinian and Anthemius, Napoleon and Haussmann,—all accomplished monuments of which the world was and is still proud. The occasion makes the man. It is not likely that architects will again have commissions to build cities with *carte blanche* as to cost, or orders for temples, very splendid, with no limit as to the number they would hold, or as to thickness of walls and number of columns; but if they had but the just satisfaction of knowing that if they produced the best designs they would be employed by the government of their country, those best designs would be produced, and they would in their manner equal, if not excel, the works of Dinocrates, Anthemius, and other architects of the past; for talent belongs to no particular age or country, and is more rife now than in the earlier ages of the world, when opportunities of learning were few.

When the conqueror of the world set foot in Egypt, 331 B.C., after his conquest of the Phœnicians, a city sprang into existence at his word. The site he chose was a fine one: it was on a slip of land situated between the Lake Mareotis and the Mediterranean. There was an island in front of it, which afforded shelter for vessels, and formed a port; and on the other side there was a port on the lake, to which the products of Egypt and Nubia were conveyed by the Nile, which communicated with the lake.

Pliny gives a short account of the manner in which Dinocrates, or, as he calls him, Dinochares, proceeded with his work. "Building the city upon a wide space of ground, 15 miles in circumference, he formed it in the circular shape of a chlamys, uneven at the edge, giving it an angular projection on the right and left; while at the same time he devoted one-fifth part of the site to the royal palace." As the city was to be the great place of exchange for the products of Asia, Africa, and Europe, the chief thing to be done was to form a communication between the outer and inner ports: so he constructed a wide road between them; and then at right angles to it, intersecting it at about the middle of its course, he laid out the principal street of the town, 100 ft. wide. This street ran almost parallel with the seashore, and was called the Bruchion. This grand way was lined with palaces and other public buildings. A similar street is to be found in all cities built about this period. At Damascus, in the street called Straight; at Soli, and in the deserted towns of the Hauran. This rectangular arrangement was first adopted by Hippodamus, who built Rhodes, and was celebrated as an architect of cities. Around the Bruchion were grouped those magnificent edifices which gave renown to Alexandria. Such were the Serapeion, which was built on an eminence, and approached by 100 steps; and the museum, which contained the Alexandrine library.

After Alexander's death, Egypt fell to the lot of his lieutenant, Ptolemy Soter, who enlarged and improved the imperial city by connecting the island with the mainland by means of a jetty called the Hepstadion, and building on it the celebrated lighthouse which was considered one of the seven wonders of the world. He was the founder of the family of Lagidæ, who reigned in Egypt till the time of the Cæsars. He and his successors took a pride in decorating the capital. The palace of the Ptolemies, the tomb of Alexander, the theatre, Possidion, Timoneum, Gymnasium, Paneum, and Hippodrome, were all erected by them in and around the Bruchion. Thus Alexandria became the finest and most prosperous city in the Levant, at about the time of the commencement of the Christian era. Three centuries after it began to decline; for, as it became the theatre of many of those violent political and religious convulsions which preceded the fall of Paganism, one of which has been so powerfully described by the author of "Hypatia;" it suffered fearfully in each outbreak, and was devastated by the revolted, and by the repressors of revolt, till its final destruction was consummated by Amrou, the lieutenant of Calif Omar, who took possession of it A.D. 641, and burnt the Alexandrine library, the loss of which was greater than would be that of all the libraries at present existing in England and France. What was the extent and magnificence of Alexandria at that time may be gathered from the report of Amrou to his chief, in which he

mentions that the city contained 4,000 palaces, 4,000 public baths, 400 circuses, and 12,000 gardens; so that even in the time of its decadence its inhabitants did not lack places of amusement. Subsequently, it fell into utter decay, and became an immense heap of ruins. Le Brun, who visited it in the seventeenth century, says he "never saw anywhere finer ruins:" he describes the remains of the Palace of Cleopatra, the obelisk called the Needle and Pompey's Pillar, and adds that he saw very few inhabitants amongst the ruins. In 1777, there were only 6,000 residents, in the place of 600,000 who occupied it in the time of the Lagidæ. Since the commencement of the nineteenth century, however, owing greatly to the energetic character of Mahomet Ali, but more especially to the circumstance that it has become our stepping-place on our road to India, the prosperity of Alexandria has revived, and it has again become one of the most flourishing places in the Levant. Its pristine grandeur has, however, been replaced by modern comfort. We were astonished on landing, after being accustomed to the semi-barbarous squalidness of the Frank quarters in Stamboul, Smyrna, and Beyrout, to encounter here certain signs of European civilisation in its rows of handsome houses, having an air of English comfort about them, in a square laid out with some degree of taste, and surrounded by consular residences and hotels, and above all in seeing stylish-looking carriages drawn by spirited horses, which whirl about the sandy streets of the town in place of the rickety arabas with which one mounts the tortuous narrow lanes that lead from Galata to Pera. Most, if not all, this life and prosperity is owing to Anglo-Saxon gold and Anglo-Saxon enterprise, which alone seem to have the power of animating the dead East.

The modern town is built almost entirely upon the Hepstadion, which from a jetty became a wide isthmus; and, owing to this position, it enjoys the sea-breeze from whatever side it blows. Here is situated the great square. On emerging from it the traveller who has not studied a plan of the town before his arrival is surprised to find that on all sides but one his peregrinations are stopped by the sea. By going southwards, he, however, can get clear of the modern town, and, after passing the Arab walls, will find himself among the heaps of sand which alone mark the site of the ancient palaces of Alexandria. He will find but few traces of its ancient splendour. The most renowned is the falsely-called Pompey's Pillar. It stands a few hundred yards outside the gates of the town. Before reaching it he will pass a forest of date-palms covered with bunches of tempting fruit. He will also have an opportunity of examining the towers of the ancient fortifications, which present internally interesting examples of Saracenic vaulting.

The column—which has been ascertained from a half-obliterated inscription to have been erected by one Publius, in honour of Diocletian,—consists of a granite shaft, with Corinthian capital and base, standing on a pedestal. It is about 100 ft. high, and appears to have sustained a statue. In the sandy mounds adjoining the Arab villages near the column are to be seen some catacombs adorned with Christian paintings.

Cleopatra's Needle is one of two obelisks brought from the Temple of Heliopolis—the On of Scripture—near Cairo. One of them belongs, or did belong, to the British Government, and it is to be regretted that as we have so many vessels in Government employ constantly in the harbour of Alexandria, none of them have been commissioned to bring away this relic of antiquity, which might grace our city *if it were allowed standing-room*.

France spared neither trouble nor expense in transporting the obelisk of El Uksor from a still greater distance in order to place it in its present position in the centre of the finest Place in Europe. We could very well have afforded to follow the example she has set us, and if a few square feet in the City were denied it, it might have been erected in front of St. Paul's, under the protection of the Dean and Chapter, or in one of the parks, as a memorial of the gallant admiral who, by crippling Buonaparte in Egypt, prevented him from becoming a second conqueror of the Eastern world. But no: economy is the order of the day; were the Admiralty to send a ship for such a purpose, they would be exposed to the attacks of the Opposition, and that act of zeal in the interest of art would be in itself almost enough to overthrow a Ministry.

Let the traveller to Alexandria beware that there is no place where there is such an abuse of *backsheesh*. Spoiled by Indian travellers, the Arab population live upon backsheesh. It is the first word the traveller hears upon landing, and the parting salutation he receives upon leaving. If pestered beyond endurance, we counsel him to follow the example of our fat friend, who, when surrounded in the Cairo railway-station by a knot of Arabs (each of whom had lent a finger to aid in the transport of our friend's luggage, and who kept up a continual croaking chorus of "Backsheesh! Backsheesh!" in every possible tone of voice), feigned to be deaf and dumb, and talked to them volubly on his fingers. Their cries and vociferations ended in wonder, and, beckoning their neighbours to come and see the wonderful man who had got no tongue, they allowed him quietly to establish himself in the railway carriage. Nor was the charm broken till, as the train was starting, he called out to them from the windows, "Backsheesh is dead and buried long ago. I went to his funeral in America;" leaving those who understood the English language to translate his speech to the rest.

GLASGOW, SANITARY AND SOCIAL: A BRIEF GLANCE.

"GREAT cry and little wool" is a trite expression, but it tersely and truthfully represents the practical results as yet of all the social and sanitary reformation achieved in the city of Glasgow. We will even go further, in saying social and sanitary matters in that city will make but slow progress until the work required to be done is mapped out, and thoroughly pursued in detail. Fitful efforts will always be fruitless ones, and fitful efforts have been the general character of the sanitary attempts hitherto at improvement on the banks of the Clyde.

Glasgow, as a great city, is well placed, at least on its modern basis, to effect all that the most sanguine reformer could desire. Its leading thoroughfares run in parallel lines, and these radial arteries are well intersected at right angles on both sides of the river. The traveller who would go astray in Glasgow, after the first day or two's glance at the city, should be a man of little intelligence or discernment. Glasgow is great in commercial spirit and enterprise, and it needs no octogenarian mind to remember the day when the Clyde was hardly navigable for respectable ships any nearer to the Bromiclaw than Greenock. But the deepening of the river opened up great resources that were soon availed of, and, with the shipping interests of the port, the mighty increase of the population, and the growth of the city, moved apace. As far as Glasgow is concerned, her corporation has had no excuse for blaming the Government. Little or no Government interference or aid was required; it all rested with the local authorities of the city whether their capital should in time become a model city or a spoiled and irremediable one. To be plain-spoken, Glasgow has not become a model city, insomuch as the chief elements that constitute our idea of modern greatness is wanting. Glasgow is wealthy and populous, but the primal source from which springs the vital element of her life-blood is not only tainted, but is impure. Her heart has imbibed an incipient disease, and her lungs are threatened. Without entering into allegory, Glasgow is in bad health, and her many doctors have failed to give her the least respite from the virulent maladies that are pressing her down to earth. In Glasgow, as in Edinburgh, radical evils exist, and, until these are eradicated, the pulse of this great city will not beat with a healthy pulsation. As in Edinburgh, the old city is webbed with an almost interminable number of closes, wynds, courts, entries, and villainous vennels, seething with feculence and putrefaction. Whether we direct our course through the Briggate, Saltmarket, her High-street, or Gallowgate, or whether we penetrate her plague-ridden Cowcaddens, or her Gorbals, we are confronted with the same endless and unvarying pictures of poverty-stricken humanity, cholera ova, and chronic filth. If we write strong words, we nevertheless write truthful and honest ones, and we do so for the sole purpose of leading to improvement. The poor must certainly live; they must be housed.

If improvement committees pull down human rookeries and demolish hearths and homes without providing for the location of the evicted, they override their functions, and are in criminal ignorance of the spirit of their formation.

Glasgow is dirty, and filthy, and plague-stricken at this moment. Some natures, they say, grow inured to filth, and they cannot exist out of their congenial atmosphere. We bluntly deny this. No man with a spark of common sense in his brain or a manly feeling in his breast would prefer living in filth and dirt, or would give preference to dwelling in a loathsome court rather than a clean cottage or a comfortable and healthy room. Life and health are precious to the humblest and most forlorn members of the human family, and there are none so stolidly stupid, save they are incurable eccentrics, who would sottishly hug lasting dirt and certain disease and death in preference to health-prolonging surroundings. Here we take issue in the interest of that science that will yet revolutionise the face of the world, and lengthen the life-span of unborn generations.

Improved dwellings and thorough drainage are the first step; next, a plentiful supply of pure water and the circulation of unpoisoned currents of heaven's unexhausted air. In the thickly-populated localities already enumerated, the working-classes are matted together. Let us instance again any of those darksome alleys of High-street. How, we ask, does the sanitary wisdom of the Glasgow Board of Health or Corporation intend to deal with the purification of these entries, until progress replace them and find suitable homes for the dwellers therein? This is, perhaps, a difficult question. A monthly inspection of these courts may sound very well in the annual sanitary statistics of the city, but this kind of work will not do. The landlords of these abodes throw the onus of the collection of the rents on the factor, as he is called in Scotland; but on whom does the onus rest of seeing after the sinks, or of whitening the walls; of sweeping the entries from end to end, or giving a sufficient supply of water. This work is hardly the factor's work; and certain we are that the poverty-stricken inmates of these courts do not feel called upon to move in the matter, however they may grumble and remonstrate. A street-to-street and lane-to-lane visit in the worst quarters of Glasgow opened our eyes and staggered us. We found in our way leading thoroughfares fairly and cleanly swept; but we had only to turn into the nearest close to our hand, and the odious comparison of "Look on this picture and on that" arose. To lighten the evil along the line of these wretched quarters, we would have the fire or water plugs closer, and more numerous, and at least once a week the application of the hose could be given for the flushing and cleansing of the channels, and every base line and angle of these courts. This would be comparatively easy work, and such work would be invaluable in these narrow courts and vennels, where fever and other contagious diseases are of constant recurrence.

Glasgow has recently appointed a sanitary officer, or an inspector of nuisances, under the Board of Police. The sanitary inspector, or inspector of nuisances, who would undertake such a task for Glasgow, and perform it in a middling manner even, should be a marvel of locomotion and industry. Such a task in such a city as Glasgow, not only requires an inspector-in-chief, but inspectors in number. In fact, the sanitary work in this line in Glasgow requires a system and a department, and the duty of the staff of this department would require a subdivision of districts. As a beginning, we would say Glasgow, should be divided into at least four districts, over which there might be appointed distinct district inspectors. The city police individually, would form useful auxiliaries in the work, as they could take notes on their line of duty or "beat," which notes would be useful data for the local board at head-quarters. Thus a rudimentary system of inspection would rapidly assume the proportions of a well-organised scheme, and in time it would develop good results.

It would not be necessary for the police to arbitrarily interfere with the inhabitants in sanitary matters. They might draw attention to evils, and direct the inmates' or owner's attention also to cases of apparent negligence; but otherwise, their report would subserve the purpose desired. It seems to us that the law that regulates the erection and construction of dwellings in Glasgow, must be a very loose and lax one. We entered several intended dwellings for the working classes, but they did not at all come up to the standard nor approach it, in meeting the requirements of the lower or working classes. In each of those we saw the space

of room is too small, and the questionable system of "flats" is worked on the narrowest health-supporting gauge. The tenant is here provided with bed-spaces, boxed up between lath and plaster, or half-brick thick partitions, and the space occupied by these bed-spaces, when deducted off the room, makes many of them about 8 ft. or 9 ft. square, hardly more. No neat iron bedstead or clean and polished birch or mahogany one is wanted in your Scotch working-man's "flats." Two parallel pieces of scantling run from wall to wall, and a 9 in. or 11 in. piece forms the external sideboard. The Scotch tenant in these working-men's "flats" may "bolt the moon" betime, and run away with the bedding, but we are bound that he will not levant with fixtures. The bed is intended to serve a generation or two. On each "flat," in some of these houses there are six rooms. Two are intended for each family, and a water-closet is on each landing. The rent is 10*l*., including the tenant's share of the taxes and rates. How families can be reared up in decency in these narrow structures we do not know. But even these are not the lowest description of your working-men's tenements. There are some flats where only one room is appointed for the sleeping, eating, washing, cooking, and living purposes of a family, and the water-closets of these latter domiciles are not on each landing, but one is designed to subserve the entire purposes of several families. What must be the state of these dwellings, and what can be the morality and decency alive within them? And, mark ye, these are not the old town structures, but the new ones for the working classes of Glasgow in course of erection now. And they will be inhabited, though the accommodation is small; for the rents, though not low, still are lower than elsewhere. These improved (?) dwellings will leave a record of doom behind them yet that the nearest churchyard and the jail will show, and the streets of Glasgow in living contamination exhibit.

Why should we point them out by number and name? They are built to sell and to kill; and your sanitary inspectors of nuisances, people of Glasgow, consider them fit and proper dwellings for your working classes!

Turn we through the fever-stricken Cowcaddens, and are there not more of them? The dying are here burying the already dead; but the turn of the former will be to-morrow. The black plumes will nod, and the murdered innocents will be carried out on the same bier with the parent, and the choked sob and the suffocated sorrow will be drowned in the maddening glass, for all will be gone of that desolate home that was worth living for. The epitome of a life condemned to breathe in a poisoned atmosphere, and to vegetate amidst dirt and disease, is easily written.

We walk along the streets again, and we find ourselves in Rotten-row,—not in Hyde Park, but off the High-street, Glasgow. No grand equipage, nor courtly dames, nor green sward, nor leafy trees, nor crystal pool; no, we wade through dirt and disease-germs once more. Public institutions are around us, industrial schools are in our midst, asylums for the aged are a few paces on, and a hospital for the social evil is by our side. We penetrate lanes, and filth is everywhere. We ascend staircases, and dirt and the smell of the graveyard choke us. The streets are in ruts, and the footways are broken as if an earthquake had shaken them; and the watercourses and side channels are thick with filth. Is there a curse here, or is the contrast allowed to exist for sake of effect?

Pass we away, and after several windings we are in the great Argyll-street, the popular, the fashionable, the wide and wealthy shop-keeping thoroughfare, extending in a long line through the heart of the city. A few yards more bring us into the Irongate, and under the shadows of the old church we disappear from the wide pathway through the narrow entry. Wealth is without on the paved broadway, but want and wretchedness are in here. This is the Backwynd, and it leads from the notorious Briggate to the fashionable Irongate. Where are your sanitary inspectors, Glasgow? Ashes and filth, stench and intolerable nuisances, are under our feet. The old walls are dropping asunder with damp. The aged and crumbling tenements are chock full. No rooms are empty, and no cleanliness is here. You breathe in an atmosphere of stench. Cattle-skins are here in heaps, fresh from the butcher or knacker, as may be, and they are undergoing their preliminary process of soaking and hacking, drying, scraping, and dressing, or other more technical courses. 'Twixt human and beastly smells, disease and dirt, dampness and poverty, the Back Wynd has its share. In here, then, is work for the hose. But not alone is it required on the pavement, but in the hall-ways and on the staircases of each house. The majority of the houses in this wretched court are unfit for human habitation, and apparently there is no attempt made to keep this place clean. Here, in this quarter, there are minor and many entries equally dirty. Off the Saltmarket, Briggate, Stockwell-street, and scattered over that inner space contained between the former and the latter street, there are dozens of foul places not unknown to authority, but neglected by it. Along the line of the Gallowgate there are networks of courts and lanes, filthy and foul, darksome and unfit for human creatures; and yet, in these dismal rookeries, and in the thick pestilential atmosphere of these dreary quarters, many of the labouring and working classes are located. The Union Railway, which is now in course of construction, has swept many of these fever dens away, but with what good effect we need not inquire. Had there been a sufficiency of good dwellings for the dispossessed to betake themselves to, no harm would have been done; but, in the absence of such, quarters already over-crowded have been resorted to for the necessary shelter.

The subject is so large, so sorrowful, and so important, that we must take another Number to pursue it in.

ART-WORKMANSHIP COMPETITION, SOCIETY OF ARTS.

THE following is the report of the judges, appended to which is the list of prizes awarded:—

"In submitting our list of awards for the competition amongst the art-workmen for the session 1869-70, we desire to congratulate the Council of the Society of Arts upon a more worthy response to their liberal invitations to the workmen, to forward good specimens of their handicrafts, than was made last year.

This improvement is manifested rather in the absence of the very bad than in the presence of the very good. In the second division, however, comprising the application to ordinary industry of prescribed art-processes, we have met with several works of conspicuous excellence. Foremost in the list of these, we must place the ornamental ironwork for the balcony of a window, executed by Messrs. William & Henry Robson, a work uniting three special merits—elegant and not overloaded design; masterly technical execution in forging, twisting, &c.; and moderate price. We are fully aware of the high position occupied in metal working generally by this country at the present time, but we look upon this work of the Messrs. Robson as an especially good example. We have, therefore, awarded to it the North London Exhibition prize for the best specimen of skilful workmanship at the Society's exhibition, in addition to a premium of 10*l*.

In several other instances the Exhibition contains good evidence of excellence in metal working, and the Messrs. Emms's balcony and wrought-iron banister are very satisfactory.

In metal working in other divisions we have to commend highly the 'Virgin and Child,' worked in low relief in iron, after an example in the South Kensington Museum, by Mr. A. Dufour. In this case we have also to notice excellent work combined with moderate price. To Mr. A. Dufour we have awarded a premium of 10*l*.; while, for a corresponding work, executed by Mr. Adolf Ostertag, we recommend that a prize of 5*l*. should be given.

The hammered iron knocker, executed by 'A. S.,' is large in style, and well and simply treated.

In coppersmiths' work, the *repoussé* mask wrought by Mr. G. Deere is well 'bossed' out, and may be regarded as a skilful piece of workmanship. Mr. A. Millward has forwarded a good specimen of the inlay of German-silver in copper, and a still better circular ornament pierced in metal; the latter is agreeable, and characteristic in design, and is worked with a cleanliness of cutting and truth of figure highly to be commended.

It is to be regretted that, in working in the precious metals, in which at the present time the art-workmen of Paris and Vienna are so superior, the Society's Exhibition should contain nothing worthy of notice.

In the second division, however, we are glad to recognise, on the part of Mr. Alfred Gray, a power to execute enamelling on metal in the style (a novelty in this country) which has gained so much reputation for the houses of Christofle and Barbedienne, of Paris. We have awarded Mr. Gray, for his miniature frame, a premium of 7*l*. 10*s*., and shall hope to see him, on some future occasion, displaying his command over the various processes of enamelling upon a more elaborate and important scale. The application of enamelled colours on ceramic bodies, so as to form elegant commemorative tablets, has been fairly shown by Messrs. Evans & Griffiths, of the Potteries, to whom we have awarded a premium of 5*l*.

We are further pleased to be able to remark that the Society's invitation to workmen to compete under their second division has succeeded in eliciting marked novelty and excellence in English glass-working. Mr. Joseph Leicester's three champagne glasses, with filigrani in the cup, stem, and foot, fairly rival the products of Venice. The works of Mr. Barnes, though not so elegant, display command over several difficult processes in glass-blowing. In the same division, Mr. Charles Pfänder contributes various agreeable specimens of painted book-covers of a more or less novel character; and Mr. E. T. Grove an envelope-case, in various woods, enriched with carvings in low relief, and marquetry, of neat execution, and marking progress in the application to ordinary industry of an art-process hitherto comparatively little used in this country.

In the classes of carving in wood, carving in ivory, painting on porcelain, and modelling in plaster, there is little call for remark, although a fair average has certainly been maintained.

In cameo cutting, we remarked an excellent portrait of Dr. Billings, for which we have given a premium of 5*l*.

Among the works of exceptional merit, not previously referred to, should certainly be noticed Mr. H. J. Hatfield's beautiful bronze missal cover, pierced, and chased with great truth and taste.

In etching and engraving on metal, the works of Mr. S. Gill and Mr. J. Gittins were of such equal merit in our eyes, as to entitle each of them to a premium of 5*l*.

The embroidery executed by the Misses Pfänder reflects credit upon those ladies.

We noted the contributions to the exhibition of the veterans, Mr. Louis Genth and Mr. Mark Rogers, whose works we have commended.

A decided novelty in marquetry, contributed by Mr. W. Clayton, to which we have awarded the premium of 7*l*. 10*s*., appeared to us likely to be valuable for purposes of internal mural decoration.

Upon the whole, and in conclusion, we have to express our conviction that the Society of Arts, should it see fit to continue its liberal invitations to art-workmen to compete for prizes, cannot do better than offer a somewhat similar programme for the ensuing year to that of 1869-70, varying, however, some of the prescribed designs, the repetition of which has now become monotonous.

RICHARD REDGRAVE,
GEORGE GODWIN,
M. DIGBY WYATT."

FIRST DIVISION.

Works executed after Prescribed Designs.

CARVING IN WOOD.

No. 2. Panel carved in oak, after a work in the South Kensington Museum; by Mark Rogers, jun., 111, Tachbrook-street, Pimlico, S.W. Price 10*l*. 10*s*. Prize of 7*l*. 10*s*.

No. 4. Panel carved in oak, after the same design as the above; by J. Osmond, 5, Featherstone-street, Bunhill-row, E.C. Price 14*l*. Prize of 10*l*.

No. 5. Carving in wood, after an entablature of a chimney-piece in the South Kensington Museum; by C. H. Line, 41, Prince of Wales-crescent, N.W. Price (when finished with enriched moulding) 14*l*. Prize of 7*l*. 10*s*.

REPOUSSÉ WORK IN ANY METAL.

No. 7. "The Virgin and Child," iron panel, in low relief, after an example in the South Kensington Museum; by A. Dufour, 10, Cranbourn-street, Leicester-square, W.C. Price 9*l*. 1st Prize of 10*l*.

No. 8. "The Virgin and Child," iron panel, after the same example as above; by Adolf Ostertag, 24, High-street, Bloomsbury, W.C. Price 15*l*. 2nd Prize of 5*l*.

No. 10. Repoussé work in silver, after a tazza in the South Kensington Museum; by A. Clark, 28, Gloucester-street, Hoxton, N. Price 5*l*. Prize of 3*l*.

HAMMERED WORK IN METAL.

No. 11. Hammered iron knocker, after an example in the South Kensington Museum; by A. S. Price 6*l*. Prize of 5*l*.

CARVING IN IVORY.

No. 14. Plaque executed in ivory, after one of Silenus and Amorini, by Fiamingo, in the South Kensington Museum; by H. Godart, 1, Hargrave-park-terrace, Junction-road, N. Price (when finished) 30*l*. Prize of 2*l*.

CHASING IN BRONZE.

No. 15. Work executed after a missal cover in the South Kensington Museum; by H. J. Hatfield, 3, Great Pulteney-street, W. Price 18*l*. 1st Prize of 10*l*.

ETCHING AND ENGRAVING ON METAL.

No. 16. Niello work, engraved on nickel silver, after an arabesque by Lucas Van Leyden, in the South Kensington Museum; by James S. Gill, 26, Moreton-street West, Pimlico, S.W. Price 2*l.* 10*s.* Prize of 5*l.* for the exhibit of this and No. 17.

No. 20. Engraving on copper, after the same example as the above; by John Gittins, 9, Angela-gardens, Hackney-road, E. Price 4*l.* Prize of 5*l.*

PAINTING ON PORCELAIN.

No. 21. Painting on porcelain, after a drawing by Raffaelle, in the South Kensington Museum; by Herbert Simpson, 6, Queen's-road, Bayswater, W. Price 3*l.* 3*s.* Prize of 2*l.*

No. 25. Painting on porcelain, after the same example as the above; by Miss E. Henwood, 18, Craven-terrace, Bayswater, W. Price 3*l.* 3*s.* Prize of 2*l.*

No. 27. Painting on porcelain, ornament after Aldegrever; by J. B. Evans, Howard-place, Shelton, Staffordshire Potteries. Price 6*l.* 10*s.* Prize of 2*l.*

No. 28. Painting on porcelain, ornament after Aldegrever; by W. H. Slater, 7, James-street, London-road, Stoke-on-Trent. Price not stated. Prize of 3*l.*

No. 29. Painting on porcelain, ornament after Aldegrever; by Miss E. Henwood, 18, Craven-terrace, Bayswater, W. Price 6*l.* 6*s.* Prize of 2*l.*

DIE SINKING.

No. 34. Die, sunk after a Wedgwood medallion, in the South Kensington Museum; by A. Walker, 19, Alexandra-cottages, Penge, Surrey. Price 7*l.* Prize of 3*l.*

EMBROIDERY.

No. 36. Work executed after an Italian altar frontal in the South Kensington Museum; by the Misses Emma and Henrietta Pfänder, 28, Bayham-street, Camden-town, N.W. Price 7*l.* 1st Prize of 5*l.*

SECOND DIVISION.

Specimens of the Application to Ordinary Industry of Prescribed Art Processes.

No. 40. Clock Dial, enamel painted, white ground and black ornament; by James Thwaites, 25, St. John-street-road, E.C. Prize of 2*l.*

No. 42. Frame for a miniature, engraved and enamelled on metal; by Alfred Gray, 41, Brooksby-street, Islington, N. Price 8*l.* 8*s.* Prize of 7*l.* 10*s.*

No. 44. Tablet, painted with enamel colours; designed and painted by J. B. Evans, Howard-place, Shelton, Staffordshire Potteries; modelled by James Griffiths, 14, Hartshill, Stoke-on-Trent. Price 5*l.* 5*s.* Prize of 5*l.*

Nos. 45—49. Champagne-glasses, with filigrani in the cup, stem, and foot; by T. C. E. Barnes, 135, Camden-street, Birmingham. Prize of 3*l.* for the exhibit of these and No. 121.

Nos. 118—120. Three champagne-glasses; by Joseph Leicester, 13, Tenison-street, Lambeth, S.E. 1st Prize of 7*l.* 10*s.* for the exhibit.

No. 50. Pair of book-covers, decorated by painting and varnishing on both sides, china tints on black ground; and gold ornament, on chromatic ground; by Charles Pfänder, 28, Bayham-street, Camden Town, N.W. Price 10*l.* 10*s.* Prize of 7*l.* 10*s.* for his exhibit, Nos. 50—53.

No. 58. An envelope-case, in various woods, enriched with carvings in low relief; by Edward T. Grove, 14, William-street, Regent's Park, N.W. Price 5*l.* Prize of 7*l.* 10*s.*

No. 59. Design for balcony; by G. Emms. Executed by J. Emms & Sons, 3, Prince's-street, Union-street, Borough, S.E. Price when finished, 12*l.* Prize of 7*l.* 10*s.* for the exhibit of this and No. 75.

No. 60. Ditto; by William Robson and Henry Robson, 6, Park-terrace, Battersea Park, S.W. Price 7*l.* 1st Prize of 10*l.*, and "North London Exhibition Prize."*

THIRD DIVISION.

Articles sent in for Exhibition, in addition to those in accordance with the Prescribed Designs and Processes.

METAL WORK.

No. 61. Mask, repoussé in copper, of one of the Laocoon Group; by G. Deere, 11, Hermes-street, Pentonville, N. Prize of 5*l.* for the exhibit of this and No. 62.

No. 63. Grotesque masque in copper; by Robert Tow, 36, Aldenham-street, St. Pancras-road, N.W. Prize of 3*l.* for the exhibit of this and No. 64.

No. 69. "Hercules and Omphale," embossed in copper; by Joseph C. Day, Church-road, Tottenham, N. Price 10*l.* Prize of 2*l.* for the exhibit of this and No. 70.

No. 73. Inlay of German Silver in Copper, centre embossed in sheet copper; by A. Millward, 7, Hanover-street, Long-acre, W.C. Price not stated. Prize of 7*l.* 10*s.* for the exhibit of this and No. 74. Pierced ornament.

WOOD CARVING.

No. 76. Inlay in various woods, "Moses;" by W. Clayton, 125, Wardour-street, Oxford-street, W. Price 10*l.* Prize of 7*l.* 10*s.* for the exhibit of this and No. 77.

No. 81. Carved Frame in lime-tree wood; by G. H. Bull, 16, Millman-mews, Millman-street, Guildford-street, W.C. Price 18*l.* Prize of 3*l.*

No. 82. Conventional frame, for gilding (unfinished); by C. McKenzie, jun., 1A, Bishop's-terrace, Walcot-square, Kennington-road, S.E. Price 5*l.* Prize of 3*l.*

No. 84. Oak bracket; by R. A. Brangan, 54, Foley-street, Portland-place, W. Price 30*l.* Prize of 5*l.*

No. 85. Panel in birch-wood, for a sideboard door; designed and executed by William Matthews, Manor-street, Chelsea, S.W. Price 10*l.* 10*s.* Prize of 5*l.*

MODELLING IN PLASTER.

No. 93. Medallion (original), "Cardinal Wolsey;" by G. Morgan, 41, Pelham-street, Brompton, S.W. Price 1*l.* 1*s.* Prize of 1*l.* for the exhibit of this and No. 94.

No. 100. Wreath of Flowers; by T. Godfrey, 21, Chatham-road, Wandsworth-common, S.W. Prize of 2*l.*

No. 101. A North American Indian; modelled by A. Dufour, 10, Cranbourn-street, Leicester-square, W.C. Price 7*l.* Prize of 3*l.*

MODELLING IN WAX.

No. 106. Ornament; by C. Jahn, 3, Egbert-street, St. George's-road, N.W. Prize of 1*l.* for the exhibit of this and No. 107.

* This prize consists of 4*l.* 18*s.*, the interest of 167*l.* 7*s.* 3*d.* Consols invested in the name of the Society of Arts, to be awarded by the council "for the best specimen of skilful workmanship," at the Society's Exhibition of Art-Workmanship.

CARVING IN MARBLE.

No. 109. Bracket; by Samuel Moutrie, 219, Stanhope-street, Hampstead-road, N.W. Price 6*l.* Prize of 3*l.*

CARVING IN STONE.

No. 116. Study in Tisbury stone, "May;" by J. R. Heath, 2, Tenison-street, York-road, S.E. Price 7*l.* Prize of 5*l.*

No. 117. Corbel, in stone, with inlay of marble; by T. E. Jago, 122, Vauxhall Bridge-road. Price 2*l.* 10*s.* Prize of 1*l.*

GLASS BLOWING.

Nos. 122—123. Two plain champagne-glasses, with twisted stems; by Elijah Barnes, 135, Camden-street, Birmingham. Prize of 1*l.* for the exhibit of these and No. 124.

PAINTING ON PORCELAIN.

No. 125. Tea-service; designed and executed by Isaac Wild, at Sutherland Works, Longton. Price 13*l.* 10*s.* Prize of 5*l.*

No. 128. Head; by W. P. Rhodes, Newcastle-under-Lyne, Staffordshire. Prize of 2*l.*

No. 131. Slab, "The Burning Heart;" by Miss L. Leila Hawkins, Fossil-villa, Belvedere-road, S.E. Price 5*l.* 5*s.* Prize of 2*l.*

No. 134. Tray: subject, "David the Psalmist;" by the above. Prize of 3*l.*

No. 135. Fruit, after Hunt; by William Slater, Field-place, Stoke-on-Trent. Price 4*l.* 4*s.* Prize of 1*l.*

No. 139. Slab, an original design; by W. G. Fenton, 10, Chatham-street, Howard-place, Shelton, Stoke-on-Trent. Price 10*l.* Prize of 2*l.*

CAMEO CUTTING.

No. 140. Portrait of Dr. Billing, F.R.S., executed from life; by (name not stated), 37, Mornington-crescent, N.W. Price 15*l.* 15*s.* Prize of 5*l.* for the exhibit of this and No. 141.

BROWNE'S BEDE-HOUSE AT STAMFORD.

IN the wide, busy open part of Stamford, known as the Beast Market, stands an ancient stone building of part domestic and part ecclesiastical Early Tudor architecture. This is Browne's Bede-house, or hospital, a charitable institution founded for the residence of a warder, confrater, and twelve old men, by William Browne, a prosperous merchant of Stamford, in the fifteenth century. It is built upon a bank by the wayside, and is, therefore, considerably raised above the street line. The elevation towards the road consists of a long line of building, divided, as we shall presently describe, into two parts, having a large entrance-porch, with a wide, boldly-moulded archway in it, approached by a flight of many steps, and a room over it, at the west end. The division alluded to is formed by the western portion of the building, consisting of two stories, while the easternmost is occupied by the chapel, which rises to the full height. On the ground-floor, on entering by the porch, is a long wide corridor, running from west to east, having five doors on either side, which open into the small apartments of the bedesmen; and at the end of the corridor is the chapel, which is divided from it only by a transverse passage, leading to the terraced walk above the street, the easternmost side of which consists of an open oaken screen. Over the corridor and the bedesmen's rooms is a large venerable chamber, now called an audit-room, divided into two by an oaken half-timbered screen. Between the windows are carved projecting cornices, evidences that each wall-space was once filled with tapestry hangings; and some rich stained glass also bears witness to its former consequence. A long table, dated 1583, and a chest, 1629, are additional though later relics of old times. This upper room also once opened into the gallery of the chapel, though it is now partitioned off from it by a screen; so that it was possible, when convenience required it, that persons could witness the service in course of celebration below, without descending. Very rich and beautiful must have been the scene they looked down upon from this elevation. The windows of the chapel shone, as they still shine, with some of the rarest stained glass in the kingdom; and the bench ends of the stalls were carved, as well as the misericords, as we may still see. In the rear of this, the main portion of the hospital, is a cloistral court, round which run chambers for the warders and officers. From this enumeration of the features yet to be looked upon of the merchant's old charity, it will be seen that we have here veritable specimens of Mediæval art-work of great value and interest, encased in a building of equal worth.

In the hope that this art-work may be preserved for those who come after us, we draw attention to the recent fortunes of the quaint and picturesque hospital. A few years ago it was deemed an improvement to remove the slope of the bank between the building and the roadway, to gain a little extra space for the farmers at corn-market, and to build in its place a retaining-wall, to keep the earth up. The consequence of this ill-advised step was that the foundations have ever since given way, and great fissures appeared some time afterwards in the front elevation and towards the west end. As this was evidently only the commencement of the mischief, it was imperative that steps should be taken to put a stop to it. It will scarcely be believed that, in the present day, there were persons who were for demolishing the whole fabric; clearing it away, stick and stone; razing it to the ground, under the impression that an enlarged annuity to each bedesman, with liberty to lodge where he chose, would be a better mode of carrying out the founder's intentions of benefiting him; but, happily, there were others of a different degree of culture who thought otherwise, and whose tongues were weighty at the councils upon the decision of which the fate of the building depended. Finally it was resolved that the old men's rooms should be rearranged, for which purpose some apartments at the back only need be demolished, and the front of the hospital should be taken down only so far as the cracks, and be rebuilt, with the porch also, stone for stone; furthermore there should be a clock-tower added at the west end, and a house for the warden at the east end of the chapel which last part of the fabric should be held untouched.

The old place is now in the hands of the restorers. We plead for care and conservation, at all hands, at every step. Already buildings at the back have been taken down, and a token found by which we may know that those who went before us took some pains to preserve at least one item of antiquity, though the mode pursued was not one we should now hold up for imitation. Boarded up, in a cupboard of the warden's old house, was found a worm-eaten wooden alms-box. It is of a jar form, measuring 8½ in. in height and 16½ in. in circumference at the base, where it is larger than at the lid, which is slightly narrowed, with a neck. It is banded about with iron, and has a hasp box-lock, and a staple and loop to keep it fast to the wall. Similar alms-boxes have been noted at Harbledown and Neen Sollers. It is to be hoped that this one will be carefully used, and placed in some convenient position, where it will be, at the same time, out of harm's way.

It would be condemnable in the highest degree if any of the ancient features we have mentioned should be removed. The venerable air of the upper chamber, with its cornices and screens, is beyond price; and even the Mediæval names scratched upon the plaster-work of one of the partitions are a pleasant sight to the archæologist, and might be spared. We shall help to give a realisation of the hoary charm of the place by transcribing the following lines, which are now to be read, painted on a tablet, upon one of the partition walls, and which are a translation, made in Stuart times, of the earlier Latin inscription, "An° Dom¹ 1495 An° Regis Henrici VII. Decis":—

"THIS STRUCTURE NEW CONTAINS TWELVE HABITATIONS
WHAT SHALL REMAINE FOR FUTURE GENERATIONS
FOR OLD OR POORE OR WEAKE AND MEN UNHEALTHY
THIS BLESSED HOUSE WAS FOUNDED NOT FOR WEALTHY
HER THAT ENDOWED FOR AYE AND THIS HOUSE BUILDED
BY THIS GOOD ACT HATH TO° SINNE PARDON YIELDED
THE HONOR OF THE COUNTY AND THIS TOWNE
ALAS NOW DEAD HIS NAME WAS WILLIAM BROWNE
BEE IT A HOUSE OF PRAYER AND TO DIVINE
DEITIES DEVOTED ELSE NOT CALLED MINE."

The chapel is equally, or still more, captivating. Every caution should be used that the matchless stained glass be not destroyed, and the rare carved stalls should be considered. In Leland's "Collectanea," Yorkshire is said to be "full of knights," and "Lyncolnshire men full of mights." Granting these last are as mighty as of yore, they can show but few things to compare with William Browne's "House of Prayer." Not that it remains absolutely intact as he reared it, for the original altar stone is now imbedded in the pavement. But the inlaid brass of the founder, in the Lady Chapel of All Saints' Church, near at hand, or that of John Browne, his father, merchant of the Staple of Calais, who is represented in a sleeved gown and mantle, standing upon two woolpacks, is not more quaint, and calm, and meet, than this old place. We trust we have said enough to impress its guardians with the wrong they would do should they suffer the removal, damage, destruction, sale, or barter of any of its component parts.

St. Saviour's, Eastbourne.—The Duke of Devonshire has given 1,000*l.* towards a fund for building a spire to St. Saviour's Church, Eastbourne.

PLANTS AS SANITARY AGENTS.

AN interesting address on this subject was recently delivered in the Museum in Leicester by Mr. Ingram. After considering some of the causes which contribute their quota of dirt to the world, the reader thus adverted to those sanitary agents which are found in the vegetable kingdom, to which nature appears to have assigned the task of assimilating and reconverting the matters resulting from the waste of the animal creation :—

The beneficial action of trees and shrubs in a town consists not only in the work the roots perform of removing decaying matter from the ground, but they effect a further good. Plants absorb carbonic acid, and give out oxygen; and as in towns the air is vitiated by carbonic acid and other products of combustion, the multiplication of trees, shrubs, and plants, large and small, increases the volume of oxygen, which is the vital principle of the air, and so adds to the salubrity of every street or square in which they grow.

Trees are not alike in taste or constitution. Adapted by nature to suit the varying circumstances found in the world, some thrive best in rich, others in a poor silicious soil; some delight in a calcareous soil; others abhor it: hence all trees are not equally suited for planting in towns. Accustomed to the pure and freshening breezes of the mountain-side, some of the pines and firs fail to grow in an atmosphere not altogether pure. The cedar of Lebanon is a tree of wonderful adaptability, and should be introduced in the new plantations on the race-ground. The Wellingtonia appears to thrive everywhere, as does deodar and Lawson's cypress. Deciduous trees, with large woolly or hairy leaves, are not suited for towns; the particles of carbon that float in the air resting on the leaves, often destroy them. The smooth-leaved lime, the Oriental plane, the sycamore, elm, ailanthus, chestnut, and acacia are amongst the trees best suited for planting in towns. The evergreen oak is a noble tree, and it might be planted experimentally. The aucuba, holly, lilac, laurustinus,—all do well in town gardens, and recent experience shows that many plants do exceptionally well, even in the smoke of great cities like London: the chrysanthemum is an example.

There are many climbing plants that, while they embellish a house, purify it, sending roots about its walls, where impurities are often found, and thus assisting to check all unwholesome exhalations; amongst which may be enumerated ivy, Virginian creeper, clematis. Fruit trees planted against the wall of a house do more than embellish it, although the vine is sufficiently handsome to grow even without hopes of fruit; it is one of the most valuable sanitary plants that can be employed; its roots travel far in search of the pabulum they love, and nothing is too gross for a hungry and healthy vine. What more striking illustration is wanted of the cunning alchemy of a fruit tree; who would dream, looking at this dry stem and those dry roots, that so wonderful a production as a luscious pear or a juicy bunch of grapes could be the vital result of their action.

We speak of the impurities of a town, and although the causes actually arise within it, the effects extend beyond its limits, and particularly when a river passes near, which has been made a common sewer. Towns are as often injured in sanitary respects by the accumulation of matters which have been permitted to increase around them as by internal pollution. The palliative immediately suggested by the proximity of low lands surcharged with sewage is heavy cropping. I would intersect the fields with trees, such as willows, poplars, and alders, abolish permanent meadows, and grow mangold wurtzel, turnips, beet, Italian rye grass, cabbage, and such quick-growing vegetables, and keep the land constantly cropped. The poor sandy wastes of Barking Creek, in spite of the counter predictions of Liebig, have, when irrigated by London sewage, grown wonderful crops of rye grass.

A remarkable instance of the power of plants to divert malarious exhalations was lately related to me. Washington Observatory, U.S., is situated in a deadly marsh: the observer's assistants were killed off wholesale. Sunflowers were sown all round, and the period of greatest luxuriance was about the time when fever was most rife; the happy result was that fever disappeared, the plants luxuriating on the poison that had killed the unfortunate astronomers.

Trees draw up from the depths of the earth moisture that, charged with animal or other impurities, would otherwise appear in miasmatic exhalations; the moisture oxygenised by vegetable action is liberated into the air free from taint, and fit for human lungs. Trees present in their myriad leaves an immense evaporating surface, and the influence they exert on climate is greater than is commonly supposed.

However animate and instinct with life the outward or aërial development of a living tree may appear, its terrestrial action is not less interesting. Although we cannot see, we may imagine the eager progress of the roots in search of food, penetrating the dark recesses of the soil, or rising to the surface where the ground is warm and rich, or stretching wide, led by some wonderful instinctive power towards soil more congenial than it found near the tree. The root action of a tree is not only wonderful in the mechanical force it exhibits in feeding the hungry living thing it sustains, but in the power of selection and repulsion possessed by these functions.

It has occurred to me that trees or their roots might be employed as filtering machines about wells open to the suspicion of being tainted by the percolation of foul matters into the water within them; a network of roots round the well would probably keep everything of a nature calculated to render the water impure from passing in. Southey, in describing the Well of St. Keyne and the efficacy of its waters, gives us a good practical fact with his beautiful poetry.

As we have seen, vegetable life is stimulated by the application to it in the soil of the various waste and refuse substances, the wreck of humanity, the decay of animal matter, the results of the attrition of civilized life with the forces of the world. The solution of the question as to the disposal of the sewage may appear more practicable; we have hungry ground that might profitably be enriched by the waste of cities; we have plants, the produce of which might be increased by being fed on the same substances; but that obstacle to ponderable bodies, space, intervenes; the collection, transport, and distribution of manurial matters from our great cities to our hungry soils is surrounded with difficulties; but as these are great, so must our exertions be to overcome them.

The earth is ready to absorb and deodorise matters up to a certain extent. The plants are ready to seize the substance placed in the earth and prepared by it for their food. Let, therefore, the earth and the plant, as the means provided by nature, be employed both in town and country as far as practicable. The result will be purer air, better water, and enriched soil, that will give our teeming millions greater resources of food, which may be regarded more highly when it is considered the result of native skill, intelligence, and industry.

ARCHITECTURE AND POETRY.

A FEW weeks ago the council of the Institute of Architects made the mistake, as it seems to us, of allowing a paper to be read, and a discussion to take place, on the merits of an eminent living writer, Professor Ruskin.

Professor Kerr, in the course of the latter, said it is not always convenient to propose for discussion, in a society like this, the opinions of a popular writer; and it will be readily understood that no one could venture to carry the present subject into debate without considerable misgivings. In point of fact, this meeting can scarcely be called upon at all to give expression, either directly or indirectly, to its opinion. At the same time we may, I think, trust ourselves to consider generally the condition of things architectural, which is indicated by what the lecturer has laid before us. It seems to me that he has done well in advancing no criticism of his own. He has also done well, I think, in confining himself to the mere attempt to condense, as I understand him, into a short statement, the essence of the views of this eminent author, as developed at least in his earliest, and perhaps best writings. One could easily perceive, from the very tone of the lecturer, that he did not expect practical architects to agree in all respects, or even perhaps in many respects, with the theories which he was quoting. Indeed, as a practical architect himself, he could not but have felt, in the very process of quotation, how very limited was the extent to which such dramatic principles could apply to sober every-day work; and it is not unlikely that even Mr. Ruskin has often felt the same.

Now, I may venture to say that architecture seems to me to have been, during the last generation or two, very much overriden by theorists; and what I would now endeavour to do is to examine the position of Mr. Ruskin, as the last and most popular of these. The position which he occupies is, in fact, one which has been arrived at by a direct and intelligible process; and this process it may be interesting to trace.

Some of our seniors remember, and all of us know, that less than fifty years ago the dilettanteism of classic antiquarianism was supreme in architectural criticism. Everything in design was referred to certain more or less authentic precedents derived from the works of the ancient Greeks and Romans. Direct copyism, therefore, was not merely authorised, but universally inculcated. Every "attempt at originality," as the phrase went, was met literally with these very words:—"Where is your precedent from the ancients?" We may consider this absurd. But, at any rate, it was an absurdity so firmly established as to be deemed impregnable for ever. We now see that it was impossible for such a romantic principle to remain absolute for any great length of time, without at all events undergoing some material change. Accordingly before long it was found that a certain other romanticism had been gradually creeping into architectural learning, springing out of the same kind of admiring contemplation, not of the classic ruins of Greece and Italy, but of the Gothic ruins of our land. So in course of time, very slowly (we are seldom sufficiently alive to the fact that our Mediæval revival has been at this moment a whole century in progress,—thus swiftly does time move); very slowly, I say, and by imperceptible degrees a new kind of copyism arose—for Mr. Ruskin himself, with all his advocacy of Gothic architecture, is decided enough, I believe, in the language he uses with respect to this mere transfer of copyism from one field to another—a new kind of copyism arose, and every day gained ground, until the first was ultimately overthrown, but overthrown, be it observed, by nothing more elevated, or more elevating, than the precisely similar practice of the second. If, therefore, the theories of academical classicism had ridden architecture hard, those of the archæological mediævalism had come to be no less oppressive. Then came another kind of romanticism into view, which under the name of Ecclesiology acquired a distinct character and definite demands, becoming indeed a potent influence, and almost profound science. Suffice it to say upon this delicate point, that it is well known how deeply many of the best of us have deplored the embarrassment into which the theories of the ecclesiologists in their turn have led architectural practice during the last twenty years,—triumphant as they are, indeed, at this moment. But this is not all: at the next step, new theories of the picturesque were introduced, and, apart from both archæology and ecclesiology, took their place in architectural criticism. Many writers, thinkers, and designers in architecture have been very glad to dwell upon this element of the picturesque; and if they have gone too far, professing it to be the one essence without which architecture is of no value, there is certainly something of genuine art in the sentiment, compared, with which the copyism of antiquarians and archæologists, and the formulæ of ecclesiologists, all alike fail to satisfy the intellect. At all events, here we have one more step in our march of theories.

The last step which seems to demand mention is the introduction of the theories of the poetic. Here, at last, we come to Mr. Ruskin. He is neither more nor less than the high priest of a faith which directly identifies architecture with poetry; and this for the first time in artistic history. Other writers enough have given us sentimentality and rhodomontade; but it is this writer alone who yokes together intelligently, and intelligibly if such a thing were possible, the shapeliness and unshapeliness—both loved alike—of building, with the figments, frenzies, paradoxes, and pangs unutterable, of the poetic soul. Such, then, being Mr. Ruskin's position, what has he up to the present moment made of it? Our lecturer has laid before us, from perhaps the best of his works, a pretty complete system of his principles; but what do they amount to? We cannot say they are canons of architectural criticism; we cannot say they are precepts of architectural practice; all we can say is, they are wayward architectural dreams. We listen, some of us charmed, some mystified, some amused, all

astonished,—fortunately none offended; but I fear none in any way edified. We perceive a certain sensation in the mind of having listened to a piece of masterly music thoughtfully and often powerfully rendered, but beyond its own utterance useless. When we are called upon to accept Mr. Ruskin's definition that Architecture is Uselessness, let him not be offended if we put it thus, that this architecture of his is most emphatically useless.

I would not detract, however, from Mr. Ruskin's eminence in his own particular field; and I do not know that he himself has ever claimed the merit of any direct practical teachership in professional architecture, as some suppose. Indeed, I fear those of us who assign to him so high a place in architectural criticism and in the advancement of architectural knowledge and skill, are only doing with him as he did with Turner, who is said to have declared himself all unconscious of the possession of those abstruse merits which the Oxford graduate so elaborately discovered. It is very likely that Mr. Ruskin himself is much less ambitious than his admirers profess to believe him to be. But, taking him as a charming writer, and, as I have said, Priest of the visionary Poetry of Architecture, we will every one of us I am sure be most willing to assign to him a high place. In amusing the public on architectural ground, in gilding brick and mortar with glowing words, no one can compete with him; but, as practical men, we must not forget, or permit others to forget, that when he brings to bear upon a subject so familiar to us that kind of thought and expression which is significantly called "word painting," he is using the most treacherous of all possible argument, fair and false, fascinating to the uninformed, but utterly uninstructive to the initiated, and always dangerous to the young. I am most anxious not to say a word unjustly: I would not turn upon such a writer and challenge him to take pencil in hand and show what he means; I do not admit that he takes such ground as to entitle us to appeal to that otherwise infallible test; I prefer to allow him to say all he pleases, reserving only to myself the assurance that he desires to keep within rational and respectful limits; but I think it is at the same time most important that we should prevent it from being understood by the public at large—who look to us for common sense and not for poetic passion,—that we architects are the admirers of this writer which we are often supposed to be. Give him all praise and approbation for his manly eloquence, his gracefulness of thought, his intensity and unimpeached honesty of purpose, and for his bold critical whimsies, the more vague the more suggestive, as all dreams are; but let it not be said that he is to be recognised as an architectural teacher. Mr. Ruskin is an honorary member of this Institute, and this shows the appreciation in which we hold him. We do not discourage his efforts; on the contrary, we honour them, but this is enough.

There is no doubt a certain definite philosophy which Mr. Ruskin develops in his studies of criticism (for this, I think, is the proper phrase); but it is never purely architectural—indiscriminately artistic, perhaps, and dramatic,—but never anything like an æsthetical system. For instance, it must have been frequently observed in what the lecturer read to-night that although there was something that bore on the face of it the appearance of æsthetics, yet when it came to an issue it proved to be not æsthetical after all, but romantic, and quite illogical. When Mr. Ruskin says there can be no architecture without building, and no good architecture without good building, this, as a general statement, is one which, to his mind, as an uninitiated person, may be eminently suggestive of what may appear to be important truths; but we, who know what building is,—he not knowing it,—can see nothing in the proposition but the vaguest commonplace, to which he could not by any possibility attach any real meaning in detail. The suggestiveness is not that of æsthetics, therefore, but that of poetry,—and indeed of paradox, if we revert to the leading axiom, that architecture is uselessness. So in the whole of the propositions which the lecturer has quoted, some apparently sound, and some apparently unsound, there are no really sound æsthetic canons, but only exercises of the poetic fancy. And why should poetry be brought thus to bear upon architecture? At the best it can be little more than a play upon words,—the suggestion of that which may be a fact by the assertion of that which must be a figment; and Mr. Ruskin, as a poet confessed, can never be expected,—and it is in vain for us to demand it of him,—to condescend upon plain intelligible statements involving practical architectural principles. Let us look, therefore, at this great writer in that particular view, and I think we do him far more honour, and assign to him more creditably his proper place in the economy of architectural study, than if we thoughtlessly accede to a mere compliment of courtesy by which he is made to appear to be a great teacher of our art. I hope Mr. Ruskin will yet do great service to other art; but I have no hope of him in architecture. It is too complex a thing in detail, and too commonplace in practice, for any such passionate wooing as his. When we congratulated him in this Institute not long ago on his appointment to an important professorship of art, we did so cheerfully enough; and we may cordially believe that in fulfilling the duties of his appointment he will be able to work out some important principles of art; but I for one can only hope that he will say less of architecture than of other arts. There is a great field open to such a thinker and such a writer in sculpture, painting, and the minor delineative arts; but architecture had better be left in other, not abler, but more practical hands. I think Mr. Ruskin has not written much on architecture lately. We have heard that he speaks even disparagingly of his own writings. A German philosopher says, "We are very near waking when we dream that we dream;" so also let us say that Mr. Ruskin has come all the nearer to correct principles of architectural criticism when he mistrusts his own writings. I will not say that he has done damage to architecture; but I must ask leave to say this, that if he will consent to devote the great powers bestowed upon him by nature to the development of poetic principles in arts of the more poetic sort, he will do more for the promotion of his own mental enjoyment and the public benefit than by random efforts in respect of that undoubtedly great and fascinating art which we who know it best, know to be nevertheless confined, as respects its poetry, within narrow limits.

STREET ARCHITECTURE IN BRADFORD.

THE example set in London, Liverpool, Manchester, Leeds, and other large towns, of erecting large establishments for the purpose of carrying on the various departments of the retail drapery trade, is now being followed in Bradford. The local *Observer* lately recorded the completion of a large building erected in Westgate for this purpose. Another firm is about to be dislodged from premises they have long occupied in Market-street, by the improvements about to be effected in this quarter by the corporation, in the widening of Market-street and the continuation of Ivegate. The firm have decided to rebuild, and plans have accordingly been prepared by Messrs. Knowles & Wilcock, for the construction of a new building for them.

By an exchange of land with the corporation, a square plot, with an area of 711½ square yards, has been secured, partially that occupied by the present premises, and situated at the junction of New Ivegate with Market-street. The building to be put up on this site will have two fronts—to Market-street and to New Ivegate—each over 80 ft. in length. The building will rise to a height of 54 ft. above the street level,—an elevation that will enhance its appearance all the more, inasmuch as the width of Market-street at this point will be 60 ft., and of New Ivegate 42 ft. The building will have five floors, exclusive of the basement. The whole of the fronts will be of the finest ashlar stone, and the style of architecture adopted is of an expensive and elaborate character. Massive rusticated piers, placed between the windows on the ground floor, will support the first floor, the windows of which will have pilasters with caps and bases. In the third and fourth stories, the windows will be arched. The main entrance to the premises will be at the angle formed by the junction of the two fronts. There will be an Ionic column on each side of it, and the decorations will be carried upward to the roof, where there will be a balustrade, with ornamental finials. The building will be warmed by hot water circulating on the different floors. The back portion will be lighted by a well, about 29 ft. long by 22 ft. wide. The whole of the interior will be supported on ornamental cast-iron columns. The contracts for the various works required in the erection of this structure have been let to the following persons:—Mr. Thomas Burnley, mason; Messrs. Booth Illingworth & Son, joiners; Messrs. J. Cliff & Co., ironfounders; Mr. James Keighley, plumber; Mr. James Smithies, slater; Messrs. Thos. Cordingley & Sons, plasterers.

Another addition to the shop architecture of Bradford is being made by Messrs. Watson, Brothers, who have now nearly completed an addition to their shop in Well-street, which will give up a large and lofty block at the junction of Market-street and Well-street to the purposes of their extensive business. The addition is being carried out under the architectural supervision of Messrs. Andrews, Son, & Pepper. The building is of four stories and basement, and when completed will have a total frontage of 120 ft., the new portion being 86 ft. in length. The style of architecture is Italian, and is to be of a character to correspond with that of the old front. Over the angle of the building intersecting Kirkgate and Market-street a circular tower is to be erected, rising 83 ft. above the ground. The whole front of the building is constructed of cleansed ashlar walling, and the shop front is formed of an ornamental wood frontispiece. The kitchens are placed in the top story, in order to prevent any disagreeable smell from rising into the working portions of the shop, and hoists are fitted up connecting them with the several other floors, for the conveyance of kitchen necessaries, &c. The whole premises are to be fitted up with heating apparatus. A great portion of the old property has had to be pulled down in order to the formation of an open area in compliance with the requirements of the corporation bye-laws.

LECTURES OF THE CAMBRIDGE SLADE PROFESSOR OF FINE ART.

IN the inaugural lecture delivered last week in the Senate House, Cambridge, Sir M. D. Wyatt said, abroad, in France, Germany, Italy, and even in far away Russia, the fine arts had long ago received every encouragement from the proper authorities, whilst in England the deficiency had been supplied simply by the native energy of the student; and if that alone, without any civilisation, had achieved so much, what was there that might not now be expected when talent was to be fostered and encouraged in the two principal seats of learning by such a noble benefaction as that of the late Felix Slade? The specific subject of his present discourse would be an examination of and attempt to reply to these three questions:—

1. What is fine art?
2. Why should fine art be studied?
3. How should fine art be studied?

In reply to the first of these questions, Sir Digby Wyatt traced the gradual development of art historical, from the savage to the civilised man, and the results of association in the establishment of historic style. He referred to the identity in principle of the creation of God's and of man's most perfect works, and the indispensability of shaping the latter in emulation of the former.

In discussing the second question, he assigned as first reason the sense of delight such studies confer on man; he found a second reason in the spirit of gentleness and refinement which follows as a sequence of art culture; a third he traced in man's instinctive desire to create and call into permanent existence forms of beauty conceived by his imagination and fashioned by his hands. A fourth reason why art should be studied was, he thought, to be recognised in the fruit such study bears to national importance; by such study alone, he added, man really learns how to see, and enjoys the beauties of nature with a new and quickened organisation, and so long as art retained its universal and perennial interest, so long must it retain its hold upon man's affections. Whilst dwelling on this portion of his subject, the lecturer introduced the imaginary dialogue between Phideas and Archimedes, in which the latter dwells upon the glory and benefits that would result from the erection and decoration of a series of buildings which should illustrate the triumphs of the country in arms, in arts, and civilisation. Happy the country worthy of such illustration, which had artists capable of executing and people capable of appreciating it. He concluded his treatment of this part of the theme (how art should be studied) by dwelling upon the privileges and responsibilities which accumulate upon the artist as the fruits of such studies. They must, he said, study art unceasingly, laboriously, unselfishly, comprehensively, and conscientiously; for Art only granted

her rewards to those who, by constancy in the pursuit, proved themselves worthy of them. By investigation so conducted they would receive great benefit, and that benefit they should endeavour to extend to others, whereby the recipients would be all the richer, and the donors none the poorer.

In turning practically to the question of "How should art be studied?" the lecturer showed the dependence of any answer to that question upon a realisation of the initiative and constitutional nature of abstract and applied art. Having defined the leading conditions of these, and made manifest the extent to which they pre-determine, as it were, the limitations of practice, he observed that the first step towards successful practice consisted in the education of the eye; the second, in the education of the hand. The first efforts necessary for the education of the eye he regarded as the analysis of, and consequent power to re-constitute, complex form. Such forms he attempted to classify, and to exhibit the various modes in which they became visible, tangible, and reproducible through the contrast of light, shade, and colour. He dwelt upon the endless variety existing in nature, and susceptible of reproduction in art, as well as upon form as expressive of function, and the just expression of function as arbitrarily determining form.

THE SEWAGE QUESTION.

Leeds.—This town has made a large main sewer, emptying itself into the Aire about a mile below the town, but it now finds itself restrained from using it. This is the effect of a decision just given by Vice-Chancellor James. The decree will not begin to take effect till the last day of the next session of Parliament. It is expected that before that period arrives a general measure on the subject of rivers pollution will have been passed.

Rotherham.—The state of the Don, and the possibility of getting the attention of the Rivers Pollution Commissioners directed to it, has been the subject of remark at a meeting of the Rotherham Local Board.

A Sewage Case in Chancery.—Vice-Chancellor Malins has delivered judgment on an information preferred by a millowner against the Local Board of Bishop Stortford, calling upon the Court of Chancery to restrain the Board from permitting the sewage of the town to flow into the river Stort, so as to create a nuisance. The plaintiff's witnesses complained that the river was in such a state that fish could not live in it; animals could not drink the water; and that "it had been converted from a pure and pleasing stream into a foul and filthy sewer." The Local Board tendered evidence contradicting every material allegation made by the plaintiff. The Vice-Chancellor said it was of the highest importance that the Court of Chancery should interfere where a nuisance had been created, but it was of equal importance that it should exercise its jurisdiction to stop those who came into court with a trivial charge. He was satisfied that the allegations of the plaintiff were grossly exaggerated and utterly untrue, and he therefore dismissed the bill, with costs against the plaintiff, who had set the Attorney-General in motion.

THE TRADES MOVEMENT.

Glasgow.—At a recent meeting of joiners on strike in Glasgow for the nine-hours day's work, it was stated that thirty-eight employers had acceded to the full demands of the men. It was reported that there were upwards of 920 men still on the strike-roll, the others who had gone out having succeeded in getting employment elsewhere. The meeting seemed to be unanimously of opinion that the full demands of the men should be prosecuted, and arrangements were made for continuing the movement, as also for bringing out a number of outside foremen and others who remained at work under the ten-hours system. It was agreed that, as the request for a conference with the masters had not been acceded to, the resolutions formerly passed should not presently be reconsidered, but that they should again be brought before a general meeting. In course of the discussion an opinion was freely expressed that though a conference with the masters regarding the bye-laws, &c., might be advisable, there was no necessity to confer as to the present demands of the men, as they were determined to persist in their original request. At a meeting of the master joiners, Mr. James Henderson presiding, the proposal of the operatives to hold a conference for the purpose of framing a code of bye-laws for the trade was considered; and it was agreed to state, in reply, that the "masters are quite satisfied with the present bye-laws of 1866, and therefore decline a conference on the subject."

Edinburgh.—At a general meeting of the joiners, a deputation from Glasgow having made a statement as to the present position of the dispute there, the following resolutions were unanimously adopted:—1. "That this meeting, after hearing the statement made by the deputation, approves of the position taken up by the joiners of Glasgow in their efforts to shorten their hours of labour to nine per day;" and 2. "That this meeting, being convinced of the importance of the joiners of Glasgow reducing their working hours to nine per day, and believing that that object can only be achieved by the firm and decided action of the whole trade, resolves to raise subscriptions at once for the support of the non-union men."

SCHOOLS OF ART.

The Cirencester School.—The annual distribution of prizes in this institution took place at the Corn-hall. An address was delivered by Mr. T. S. Bazley, of Hatherop Castle, who also presented the prizes. The attendance was not very large. The committee's report stated that the classes are still self-supporting, and that there has been a slight improvement in the second grade, though the students have been less successful in the third-grade examinations, and the schools for the poor also show a falling off in proficiency. They point to a considerable amount of sound steady work which the school is doing, and acknowledge the unremitting labours of the art master; but still they regret to see that the advantages offered by the evening classes are not sufficiently appreciated by the working men in the town.

The Dublin School.—The annual meeting of the Royal Dublin Society for the distribution of prizes in the Art School, has taken place in the theatre of the society. As on previous occasions, the Lord Lieutenant (who was accompanied by the Countess Spencer, and attended by several of the staff), presided. The attendance, including ladies, was very large. Mr. Mansell said that for the 140 years the school had been in existence it had sustained that reputation for taste which belonged so essentially to the Celtic race; and in the recent contest for the Princess of Wales' Scholarships, open to the entire United Kingdom, they had carried off in two successive years one of the two prizes, the other going to South Kensington. Colonel Adamson said the efforts of the committee during the past year had been principally devoted to an endeavour to extend art education amongst the lower classes. They had extended facilities to the artisans, of which there had been nearly 500 attendants at the school. They had used every effort to obtain the formation of a museum of ornamental art. By the kind assistance of Mr. G. A. Hamilton, an amount had been put on the public estimates which would enable a museum to be built adjoining the school, and which they trusted would receive the formal approval of the Chancellor of the Exchequer and of Parliament. They had great reason to be proud of the designs executed by the pupils for manufactures. They were anxious to utilise these by having them deposited in a depôt for such designs, which it was proposed to form for all the art schools of the United Kingdom. The conduct of the pupils was admirable. Although belonging to different grades and different religions, they worked harmoniously together. Colonel Adamson then spoke of the energy and zeal of Mr. Lyne the head master of the School of Art. The report stated that the attendance of students during the year has been 538, consisting of 279 males, and 259 females. The attendance of the artisan class has been 356, consisting of 259 males, and 97 females. The total receipt in fees amounted to 510*l.* 9*s.* 6*d.* The local examination of the school took place on the 9th, 10th, and 11thdays of March, in the evening, when, notwithstanding the inclemency of the weather, 169 students presented themselves; 105 of whom, 64 males and 41 females, succeeded in passing examinations in 151 papers; consisting of 52 freehand, 40 practical geometry, 24 perspective, 32 model drawing, and three projection. The report of the judges of the works executed in competition for the Society's prizes, spoke of the satisfactory progress of the school, and also complimented the master.

The Marylebone and West London School.—At the distribution of prizes to the students of the school in Portland-road, Mr. Peter Graham presided, and delivered a suitable address. He congratulated the students upon the success of the school, and he complimented the masters for the exertions they had used in promoting that success. He then referred to the great influence of art education upon the manufactures of the country, and expressed his astonishment at the apathy shown by the manufacturers of the district, the majority of whom did not contribute to the support of the school, and he trusted they would by their future support make up for past deficiencies. Mr. G. A. Stuart, the head master, then read the report, from which it appeared that during the past year 479 students studied in the school, showing an increase of ninety-eight over the previous year, and in that number twenty-five different trades were represented. During the year, 271 students sent 1,999 works for examination at South Kensington, of which number the works of seventy-six students were marked satisfactory, nineteen received book prizes, four honourable mention, twenty works were selected for further "national competition," and four received Queen's prizes of books. The national competition prizes were awarded to J. Rowley, G. Lethbridge, H. Noble, and E. H. Simmonds. In the ladies' competition in designs for fans, Caroline Pfander obtained honourable mention, and her design was purchased. The chairman then distributed the various prizes; and upon the conclusion of the distribution, a handsome time-piece, subscribed for by the students, was presented to Mr. W. Pilsbury, who is about leaving the school.

The Warrington School.—The annual distribution of the prizes won by the students has taken place. There was a large assemblage, chiefly ladies. The report stated that—

"the number receiving instruction in drawing in or through the agency of the school, during 1869, has been 323, showing an increase of ten since last year. This number includes 187 students of private schools, and 136 students who had attended the Central School, from whom 152*l.* 11*s.* 6*d.* have been received. The total amount of fees show an increase of 3*l.* 5*s.* 3*d.* over the sum received last year. The attendance at the classes has been:—Day classes, eighty-six students, who have paid 1*l.* 1*s.* and 12*s.* 6*d.* per quarter, and 1*s.*, 2*s.*, 3*s.* per month; total, 113*l.* 17*s.* 6*d.* Evening classes, fifty students, who have paid 1*s.*, 2*s.*, 3*s.* per month, and no entrance fee; total, 38*l.* 14*s.* The school received three Queen's prizes of books at the National Competition, in addition to which seventeen third-grade prizes of books were awarded to students whose works were sent up for inspection; and seven second-grade prizes were awarded at the local examination; fifty-four students sent 117 works to the annual examination in London. Payments were made on account of the works of thirty-nine artisans. The public examination of the school took place on the 9th and 10th of March, at which eighty-five persons presented themselves for examination, of whom forty-two were successful. An exhibition of the students' works took place in April, and was attended by 1,723 visitors."

PREMIUMS AND MEDALS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute, held on Monday evening last, Mr. Charles Barry in the chair, it was announced that the president, Sir Wm. Tite, M.P., had presented a donation of 100*l.* to the travelling fund of the Institute, which was established several years ago in order to afford help to students travelling in pursuit of their professional studies. A letter from Professor Ansted was read, in which that gentleman tendered his services to deliver occasional lectures before the Architectural Art Classes now in course of formation, under the auspices of the Architectural Association and other cognate bodies, and in aid of which the Institute has voted a sum of 50*l.* from its funds. The thanks of the meeting were voted to Sir Wm. Tite and Professor Ansted.

Mr. Herbert Ford, of Aldermanbury, and Mr. Charles Smith, of Reading (Associate), having been elected Fellows, the meeting was made special "to consider the recommendation of the Council with respect to the award of the Royal gold medal and other medals and prizes of the Institute for the year 1869-70."

The Chairman having read the recommendation of the Council that the Royal gold medal be awarded, subject to her Majesty's gracious sanction, to Mr. Benjamin Ferrey, F.S.A., member of the Institute, Mr. T. H. Wyatt, after referring to Mr. Ferrey's long and honourable professional career, proposed, and Mr. J. H.

Good seconded, the approval of the recommendation of the Council, which was adopted in the most cordial manner.

The other medals and prizes were awarded as follow :—

Soane Medallion, with 50*l.*, under certain conditions (design for Railway Station in the Gothic style), to Mr. Ernest C. Lee, of Great James-street, Bedford-row; successful competitor for the Pugin Travelling Studentship for this year, and winner of the late Sir Francis Scott's Prize two years ago.*

Institute Medal, with 5 guineas, in the competition for drawings, to Mr. E. J. Munt, of John-street, Adelphi.

Medal of Merit in the same competition, to Mr. A. Hill, of Cork.

Institute Silver Medal, for Essay, to Mr. J. Huskisson Guillaume, of Marland-place, Southampton.

Student's Prize, in Books, to Mr. Adolphus Came, of Great James-street, Bloomsbury.

For Sir W. Tite's Prize, no drawings of sufficient merit were sent in.

The list of subjects for the medals and prizes of 1870-71 having been discussed and agreed to, the meeting adjourned.

ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of this society was held on Thursday, the 10th inst., at the Rooms of the Royal Institute of British Architects. In the absence of the president (Mr. Sydney Smirke, R.A.), Mr. Geo. J. J. Mair took the chair.

The report of the council, read by Mr. J. G. Turner, showed that since the efforts made some time since to enlarge the means of the society, twenty-eight new members have been added to the list of subscribers, besides the augmentation of the funds by various liberal donations. Unfortunately, owing to the depression in all branches of art, applications had been considerably increased in number; and, therefore, the special efforts before alluded to had been most opportune. The report further went on to say that many of the early friends and liberal donors to the society had, during the last twelve months, been lost to it through death; and it concluded with an appeal to all its members not to allow their efforts to languish, but to pursue the good work on which they were engaged, thankful that they themselves were spared and able to carry on a task which they knew full well to be a becoming and a worthy one,—viz., that of assisting those who were helpless, and encouraging those who were unfortunate.

A discussion then ensued as to the best means of recruiting the subscription-list, in which Messrs. C. F. Hayward, Edwin Nash, and C. Mayhew took part, and during which it was elicited that the number of the subscribers to this society did not by some hundreds amount to that of the Royal Institute of British Architects; and that many distressing appeals for assistance were very inadequately responded to by the council, through the want of funds at their disposal.

Sir William Tite's account (the treasurer's) for the year showed :—

Total receipts			£419 13 11
Disbursements,—			
Expenses	£107	6 4	
Invested	88	10 0	
Gifts to applicants	150	0 0	
			345 16 4
Leaving a balance in hand			£73 17 7

The sum of 107*l.* 6s. 4d. expenses included cost of special appeals to the profession.

The amount received by donations in about twenty years, and invested, amounted to 1,557*l.* 1s. 3d. stock.

The election of council and officers and other routine business was then proceeded with, and various votes of thanks were passed.

"MEMORIALS OF TEMPLE BAR."

SIR,—I thank you for your notice of my little volume, and have to acknowledge the justness of your remarks as to the crowded nature of its contents. My apology is conveyed in the preface to the book,—a "desire to give as many facts in a cheap and collected form, so as to be within the reach of every citizen of London."

May I ask a small space to correct a slip in your notice—trifling, yet of interest. It was Lord *Bellasis*, not Bellarges, who was appointed to the command of the guard-post at old Temple Bar at the time of the Fire of London. Though he deserted his post here, he was, nevertheless, a trusted officer in the service of the First Charles, sharing the troubles of the Civil War, and receiving many appointments of great trust. He was at various periods Governor of York, Newark, Tangier, and Hull; Lieut.-General of Yorkshire; eldest Colonel in the Twelve Regiments of Volunteer Noblemen in the second Dutch War; and yet did not escape having to fight a duel in the Marylebone *fields*, in the cause of the beautiful wife of the jealous Earl of Carlisle, a daughter of Edward Lord Howard, of Eswick. He was no less than *four* times sent a prisoner to the Tower, and only escaped by the merest chance the Tower-hill scaffold for a supposed hand in the Titus Oates plot. His head was much nearer to Temple Bar then than his body should have been some years previously. He served each king in offices of trust, assisted to restore Charles II., and eventually was appointed by his successor, James II., a Privy Councillor and First Commissioner of the Treasury. He died September 10th, 1689, and was buried in the churchyard of St. Giles-in-the-Fields. This notice of a remarkable character I trust you will not consider worthless, especially as it is derived from the Birch MS. 4162, in the British Museum, fo. 74-84,—"A Brief Relation of the Life and Memoirs of John, Lord Belasyse, written and collected by his Secretary, Joshua Moore."

As for the "Memorials of Temple Bar," I assure you my materials are not exhausted, and I yet entertain a hope to bring out, some time hence, a more creditable history of a remarkable London building, and a world-renowned City street.

T. C. NOBLE.

* The drawings marked "N. B.," sent in for the Soane Medallion, are so good that we should have been glad if the council had awarded some recognition.

ARCHITECTURAL ART CLASSES.

THE arrangements for opening the classes at the Architectural Museum, are progressing; but subscriptions are needed.

All students of architecture and the cognate arts will be eligible for admission.

The meetings of each class will be divided into two sessions of four months in the year, commencing with the opening of the Architectural Association.

The Course will consist of the following classes: — 1. Drawing from the flat and round; 2. Drawing from the life; 3. Modelling; 4. Colour decoration; 5. Water-colour drawing; 6. Perspective and sciography; 7. Architectural drawing.

Admission is to be by separate fees for each course, proportioned to the expense of the class, and as moderate as circumstances will admit.

"ARCHITECT, BAKER, AND DEALER IN CHAFF."

SIR,—What is the profession coming to? In a Hornsey paper I find advertisements from a firm, call them Stitcher & Co., setting forth—first, that they are architects and surveyors, and that the plans of a chapel they are about to build may be seen at their office; then that they are auctioneers, and have "the following valuable property to sell." Anon comes the announcement that they deal in "bricks of every description, slates of all kinds, chimney-pots, gravel, garden mould, paints, oils, and colours." While, lo and behold! elsewhere they advertise that they are really "bakers, confectioners, corn merchants, and dealers in chaff."

I enclose the various advertisements, or you will scarcely believe that I am not a dealer in chaff myself.

PRODIGIOUS.

BIRMINGHAM FREE ART GALLERY.

AN instructive little catalogue has been written of the objects of art and art manufacture in the Birmingham Free Art Gallery: it is calculated to increase the interest with which the collection will be visited. The writer contends with justice that the abuse which has been heaped wholesale on the ornamental manufactures of Birmingham, may be traced to the absence (until recently) of any collection of objects calculated to increase and cultivate the æsthetic faculties of its artisan population. The absence of such means of education has been dearly paid for locally, and has cost more in the aggregate than the maintenance of a dozen art galleries.

An appeal is made for the distribution of the superfluities of the National collections. It has been shown, as our readers know, that these would suffice to form several collections of works of art for distribution in the provinces. On the 19th of July, 1869, on the occasion of the vote for the educational supplies being put in "the House," in answer to a question asked by Lord Henry Lennox respecting the distribution of the superfluities of the National collections, a reply was given by a Lord of the Treasury, "that two collections of Turner drawings had been chosen, and would be established in Dublin and Edinburgh." *The provinces were passed over, and will be,* until united action be taken by members of Parliament, and a *band* be formed by them to demand from the Lords of the Treasury the immediate selection of the superfluities from the National collections, the formation therefrom of one collection, its division, and the distribution of the parts to localities, in order to aid the public generally, and the art and special industries practised in each. In this way alone can strict justice be done as regards the proper distribution of works of art to provincial free art galleries, that of Birmingham being specially included.

PROFESSOR SCOTT ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE II.—*continued.**

WE have now arrived at a stage of our investigation when we must pause for the sake of asking ourselves what need or requirement yet remained unsatisfied, which was essential to the perfecting of our arcuated developments, and what means remained—hitherto unused—by which such need might be met.

We have followed out our arched construction, and the process by which it was rendered at once susceptible and productive of artistic beauty, till we might fancy it to need nothing but the gradual additions of refined art to render it a perfect style; and it would be both an interesting and a profitable field of speculation to take up the style at such a point, and to study how best to clothe it with the charms of the highest art, irrespective of our knowledge of its historical destiny; how, in fact, to perfect our round-arched style to the highest and most refined artistic status: and I feel that any one who could fulfil such a task would be a benefactor to our art.

The semicircle is unquestionably the typical form for an arch, and one well suited to the majority of purposes and positions. I, therefore, wish well to him who will push a style which claims it as its leading element to its highest possible pitch of perfection. I should rejoice to see a round-arched style rendered as perfect, and its accompanying art as noble, as the Greeks did their trabeated architecture and its ever-glorious sister arts; nor do I see why such an end should not be attained, and God speed the man who worthily attempts it!

This task was, in fact, nobly though unconsciously approached by the artists of the twelfth century; nor can any one examine their works, particularly from the close of the first quarter of that century, without being filled with the warmest admiration at their determined strivings after refinement; their earnest aim to perfect every form, and to eliminate every footstep of barbaric element; to rid their work of all rudeness of execution; and in every way within their reach to raise the architecture they were developing into a really high art.

These earnest and restless strivings, however, had the effect of rendering apparent to them a defect, both structural and artistic, in the conditions prescribed by a round-arched style. They had freed themselves from the trammels of the arbitrary rules of proportion, and might render their structures lofty or the reverse at pleasure: their columns might be as short and sturdy as the most archaic Doric, or might outdo the most elegant Corinthian in the lightness of their proportions; yet the arch they were condemned to carry was limited in height to one-half of its own diameter; or, if allowed to exceed this, by means of stilting. This was evidently but a clumsy expedient, and only suited to particular positions.

The whole tendency, too, of the onward movement of the art was towards increased height; and, while walls and pillars might avail themselves to the full of this upward striving, it was hard that the arch—the very essence of the style—should be condemned to unalterable stuntiness. Proportion evidently claimed that the arch should have its fair share in the increasing height of the buildings, yet the inexorable semicircle said,—"Nay; my proportions are fixed. You may lengthen your straight lines as you please; but by no law of science can my height exceed one-half of my width."

A geometrician might reply that the semicircle might be stretched upwards into a semi-ellipse with its major axis upright. I do not think that our Mediæval buildings ever tried this dismal experiment, nor do I know that it was ever attempted, except by the barbarous Par-

* See p. 199, *ante*.

thians, in a building you will find figured in Mr. Fergusson's Handbook; and so hideous was the result that one may well suppose it to have been handed down as a warning to subsequent generations!

Nor was this craving after a loftier arch the result of taste alone. Constructive motives pointed in the same direction; for it was found that round arches, when carrying great loads, as those sustaining towers, &c., were apt to overcome the resistance of their piers; and many failures were the result. The same was found to result from *vaulting* over wide spaces. True it is that the Romans, in the great halls of their baths, had vaulted over spans of double the width of the naves of our Norman cathedrals; but this had been effected at the expense of the utility of their aisles, which were cut up into short lengths by the ponderous abutments needed to sustain the tremendous pressure of the central vault. Besides which, the Mediæval builders aimed at raising the springing of these vaulted naves to a height out of the reach of the abutment of the aisles. An arch of less lateral pressure was therefore desired.

Another motive might have led to a similar aim. We have seen what difficulties and contrivances resulted from the exigencies of vaulting over irregular spaces where it was desirable that the crowns and springers of the surrounding arches should range on the same levels, though their spans might differ to any extent. It was clear, then, that an arch of more elastic proportions was the grand *desideratum*.

The claims, then, of *proportion*, of construction, and of geometrical convenience, all took the same direction and demanded an arch of variable proportions.

This three-fold demand was met by the introduction of the *Pointed arch*.

To apply this to our main subject of *vaulting*, we at once see that, in addition to constructive advantages, the arch could now be proportioned in height to its supporting piers, and the unequal sides of the vaulted spaces could now be arched in such a manner as to satisfy the exigencies of the vaulting without the necessity of resorting to awkward contrivances; so that an accession was obtained at once of strength, beauty, and facility of application.

I have some time since called the use of diagonal ribs the *Magna Charta* of the art of vaulting; but it must share this honour with the Pointed arch. Let us now proceed to trace the progress of the art under this double charter of liberty.

The first introduction of the Pointed arch into vaulting seems to have been made without a full consciousness of its advantages, and rather with a view to strength and general beauty than to the convenience of covering irregular spaces; for in many early specimens,—as originally in the Cathedral of Sens, and in the work of William of Sens at Canterbury,—the round arch continued to be used in the narrow bay against the walls, where the pointed arch was used for the wider spans. In nearly all English specimens, however, full advantage was at once taken of the newly attained freedom: thus, at St. Joseph's Chapel, at Glastonbury,—a work otherwise purely round-arched,—the groining assumes throughout the pointed form, the narrow bays being especially acute. The same is the case at St. Cross, another very early transitional work; and in the nave and transepts of St. David's Cathedral (erected about 1180), though the groining was never carried out, we have the preparations for it with pointed wall-ribs, while the round arch is mainly used beneath. I shall, therefore, disregard this occasional inconsistency.

Before going further, I will, to prevent mistake, give the names of the parts of a groined compartment. The main ribs from wall to wall are called by us *transverse ribs*; by the French, *arcs doubleaux*. Those which pass from angle to angle, intersecting in the middle, we call *diagonal ribs*; the French, *arcs ogives*. Those which adhere to the wall, we call *wall ribs*: the French, *formenets*. If there is a rib or moulding along the apex, we call it a *ridge rib*; the French, a *lierne*. The latter, however, does not exist in early examples. Other features appear as we proceed, but I limit my first list to the simpler forms of vaulting. The French names are found in the treatise of Philibert de l'Orme, a work of the sixteenth century; whether they have been tradition-kept up I do not know, but they are now universally adopted by French writers on the subject.

I will just go over our leading cases, already treated of, showing the changes effected in them by the use of the pointed arch.

In the square groined space with level ridges there was no alteration excepting in the form of the arch, and in the more finished mouldings made use of. The diagonal ribs often took the form of a round arch, but this depended wholly on the proportions of the surrounding pointed arches.

As the diagonals were not formed by elliptical curves, it followed that the vaulting surfaces were not portions of cylinders, and that an error had to be thrown into them. In fact, they were filled in from rib to rib without any view to purely geometrical forms.

When the pointed arch is applied to an oblong compartment, or to the sides of a polygonal apse, its advantage becomes more manifest; for the power of making the narrow arches against the walls as high as we please wholly removes the difficulty which we encountered while limited to the round arch, and that without the *necessity* of stilting, though the convenience which the last-named method offered for the introduction of windows still led to its frequent use.

The irregular compartments of an apsidal aisle ceased now to present difficulties as all their arches could be made of equal height.

It is curious that, while we have in London two specimens of such aisles in the round-arched style (those in the Tower of London and St. Bartholomew's), so have we also two in the pointed-arched style, and those very different indeed in their treatment. The aisle round the apse of Westminster Abbey has compartments enormously wider on one side than on the other, and this is met simply by the varied proportions of the arches; while that surrounding the round portion of the Temple Church has double as many compartments as there are pillars in the arcade, and consequently behind every arch of the great arcade is a groining compartment which is nearly square, while behind every pillar is one of a triangular plan, vaulted in a peculiar manner from its corners without any ribs between the transverse ribs.

The vaulting of a polygon with a central pillar assumed now a form of exquisite beauty. Its two special types in its simpler form are the chapter-houses at Salisbury and Westminster,—truly a *nobile fratrum*,—and claiming special attention as showing the extraordinary beauty attained by the use of ribbed vaulting united with the pointed arch.

I have already mentioned that in this form of vaulting there is a choice between two methods of effecting it: either by supposing the main vault to span from *wall to pillar*, or from *angle to pillar*.

The former is, on a *primâ facie* view, the more natural, but it has the disadvantages of breaking the chief side of the vaulting compartment which rises from the corners into a resalient angle, and also of rendering the main ribs from these angles across to the pillar, in one half of their length *diagonal* ribs, and in the other *transverse*; and of making one half represent a *projecting* and the other a *receding* angle, while the *angle* ribs of the outer half meet the *transverse* ribs of the inner half of the vault.

These objections are entirely removed by supposing the main vaults to run directly from the angle to the pillar. In either case the ridge which surrounds that half of the vault which springs from the pillar takes the form of an inner octagon.

In the first case, the sides of this are parallel to the walls, while in the second they take an intermediate direction; the angles of the inner octagon being opposite the centres of the sides of the outer one, and *vice versâ*.

The vaulting compartments which rise from the angles of the great octagon are precisely similar to the opposite ones which rise from the pillar, and the ribs which rise from the angles to the pillar are throughout *transverse* ribs, while the angle ribs from each side duly meet one another.

I exhibit a model of a portion of the vaulting of the Chapter-house at Westminster, prepared by the clerk of the works, Mr. Kaberry; also a view of the interior, to show the beauty of this form of vaulting. Few forms, in fact, in any style of architecture present such beauties as an octagon vaulted in this manner; and I am happy to think that our London specimen, which has been lost for the last century or more, will now very shortly be restored to its original form and condition.

I have already mentioned that in all these forms of vaulting,—that is to say, those with level ridges,—owing to a geometrical error resulting from the use of circular curves for all the ribs, the filling in of the vaulted spaces must be artificially shaped to fit those curves.

The use, however, of a form of vaulting analogous to that before described as having *raised* ridges would obviate this inaccuracy.

Suppose, for example, an oblong compartment with pointed arches of similar proportions on all its sides and on its diagonals, and the vaults of each cell generated by the motion of the curve of the surrounding arches towards the point of intersection, guided by the diagonals, we obtain at once a vault with pointed arches and raised ridges, the precise correlative of that before described with round arches and raised ridges, and one in which the filling of the vaulted spaces assumes a systematic and accurately geometrical form.

The proportions of the arches are not essentials, though the form I have supposed may be considered the most perfect, as where the narrower arches approach the height of the wider ones, a curious effect is produced on the form of the ridge, which, always elliptical, becomes then so obviously so as to be unpleasing.

This form of vault was of very frequent use, though the exact method of filling in the spaces was not rigidly adhered to. Its disadvantages are, that it either limits the height of the walls available for windows, or runs up so high into the roof as to interfere with its construction. It is in many cases, however, a very convenient, as it is a very sightly, form of vaulting.

Even the simple form of vaulting with level ridges is not always convenient for windows, particularly in clearstories, where they have often to fill the whole space. This led to the practice of stilting the wall-rib to such a degree as to have the effect of twisting the groined surface of the cross vault to an extraordinary extent. This may be seen in the vaulting of the cells adjoining the clearstory at Westminster Abbey, and at St. Saviour's, Southwark. This twisting of the surface has received the very appropriate name of plough-share vaulting.

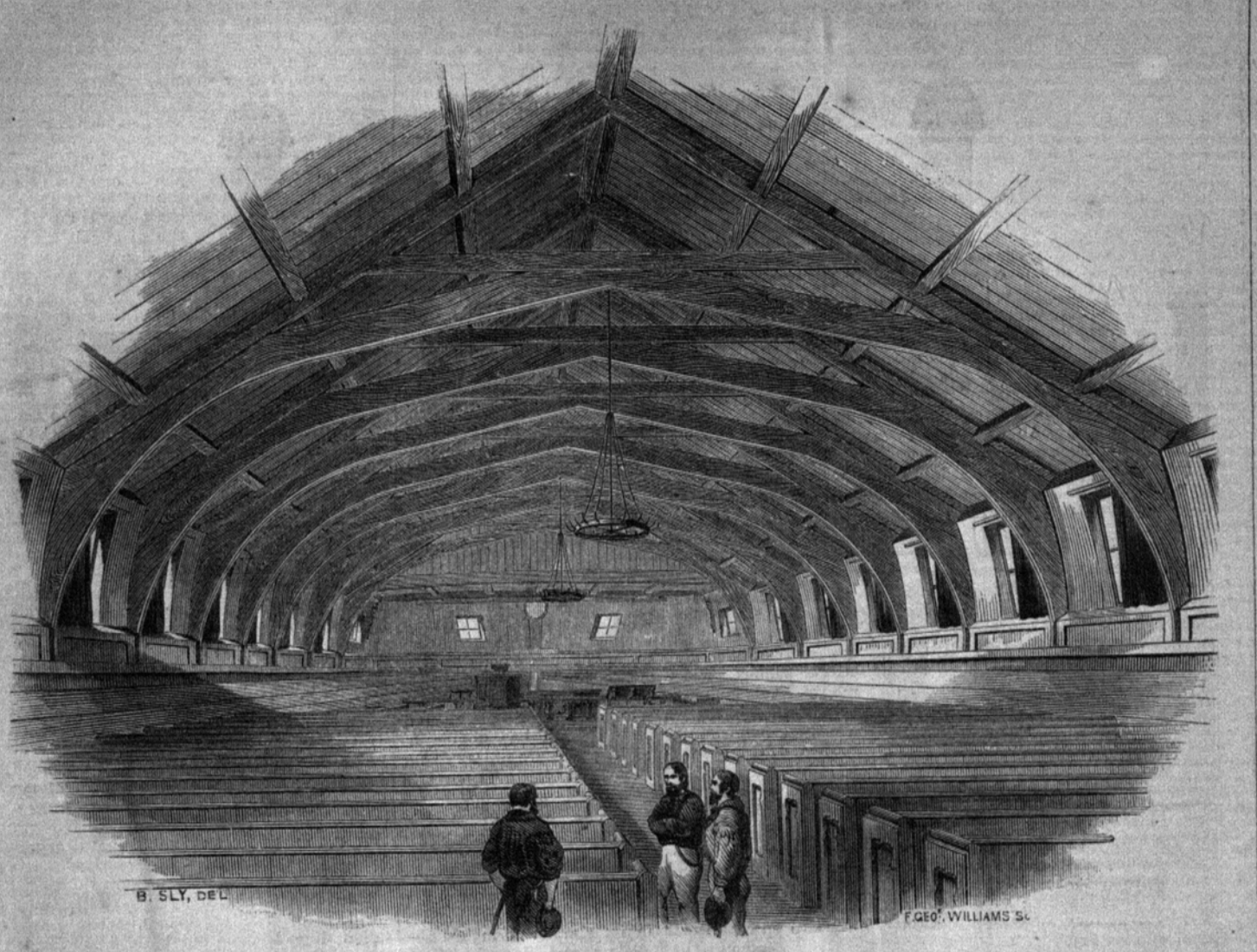
The liberty which was felt in dealing with the surfaces of vaulting-spaces, when once the salient lines became emphasized by ribs, led to the practice of the "doming up," as it is called, of those spaces, whether the ridges were raised or level; that is to say, that each course of the filling in stonework was often laid on a course, so as to increase the strength of the work, by rendering every course a kind of arch from rib to rib.

I must, however, reserve to my next lecture a description of many of the forms which the vaulting of this period assumed, and a number of practical facts relating to it; as well as the pursuit of the subject into its more advanced history; where, instead of limiting its features to such as originated in obvious and functional utility, others were added for purely decorative purposes. The subject is so extensive that I am compelled to divide my lecture upon it abruptly.

Let us, then, pause here and consider for a moment the artistic sentiment and character of the stage at which we have arrived. I will suggest, in passing, that this stage in which no architectural features were introduced for mere purposes of decoration, and which consequently leaves wide vaulting spaces, is peculiarly suited to the extensive introduction of the works of the sister arts of painting and mosaic, which may be used almost as freely here as in the Byzantine domes. The point to which, however, I desire to direct your attention is rather the *purely architectural* sentiment.

Small as is the difference of principle between the later Norman vaulting and that under consideration the impression produced upon the mind is entirely changed. The one suggests weight and pressure systematically met and resisted; in the other those forces appear to have vanished; and the effect suggested is rather a shooting boldly upwards, like the growth of a tree, than any downward pressure towards the earth. True it is that, in the decorative treatment, a colonnette is placed under every rib or group of ribs as its artistic support; yet, in its effect upon the imagination, the action is reversed. It is not the column bearing the weight of the arched ribs, but the latter springing vigorously upward from the column.

Who, while viewing a stately tree in the pride of its growth, ever thinks of its *weight* or of the pressure of its boughs upon the stem? It is with its *upward soaring* that the mind becomes impressed; and just so it is with the interior of a Gothic cathedral. The perfection



THE SHIP CHURCH, "HELENA," IPSWICH.—MR. H. M. EYTON, ARCHITECT.

with which all physical forces are met has to the mind the effect, not merely of having annihilated, but of having actually *reversed* them. So that upward striving, stately growth, and heavenward aspiration are the ideas customarily suggested as illustrating the impressions produced. The lofty avenue, with its intersecting branches, has become the chosen similitude to which it is popularly likened, and it has been universally received as the form of architecture most expressive of the heavenward soarings of our religion.

No one who contemplates our glorious Abbey Church of Westminster, and lays his soul open to its inspiration, can fail to feel sentiments in harmony with those suggested by the cognizance of its saintly founder—selected as if in anticipation of its future glories—the symbol of our religion surrounded by martlets, whose feet are erased in token that they have lost all tendency to rest on earth, but, like the aspirations of Christian worship, ever mounting on the wing towards the supreme object of adoration, and

"Flying up to Heaven's gate ascend,
Bear on their wings and in their notes His praise."

THE SHIP CHURCH "HELENA," IPSWICH.

WE spoke in our last of endeavours that were being made to meet the spiritual wants of sailors in the port of London. To provide in a similar way for the sailors in the port of Ipswich, the rector of St. Clement's, the Rev. R. H. Whiteway, applied to the Lords of the Admiralty for a ship, and obtained from them the *Helena*, a fourteen-gun sloop, which is now moored in the dock at Ipswich, and is fitted as a chapel and residence for the chaplain; it being a well-known fact that sailors have a great dislike to attend the ordinary places of worship, and the floating churches which have been provided in the various ports being generally well attended by the seamen.

To alter the ship into a chapel and residence pains have been taken not to change the general appearance of the ship, and, with the exception of the roof and a small porch, there is nothing in the exterior to denote the great change that has taken place inside. The ship is moored 40 ft. from the shore, and is approached by a lattice wooden bridge, 10 ft. wide, fixed at the shore end, and resting on two bearers under the porch, so as to rise and fall with the tide.

On entering at the level of the main deck, through a doorway cut in the side of the ship, every one must be struck with the great size and the ecclesiastical appearance of the interior. The whole of the upper deck being cleared away over that portion used for the chapel, leaves the hull from the main deck to the top of the gunwale, 11 ft. high, the height between decks being 6 ft.; an open-timbered roof was framed over the hull at the level of the gunwale, with principals between each port with carved ribs, which were brought down to the level of the upper deck, and follow the curve of the side of the ship. The whole of the roof is of deal, stained and varnished: a panelled string was formed round the ship at the level of the upper deck to hide the ends of the beams which had been sawn off, and the rough appearance caused by the removal of the deck and beams. The forecastle deck was left, and covered with corrugated iron, and forms the roof over the "chancel;" the underside, being too rough to scrape and varnish, was painted, grained, and varnished. The eight ports on each side had the reveals lined, and sashes inserted hung on pivots. The hole for the bowsprit was also glazed.

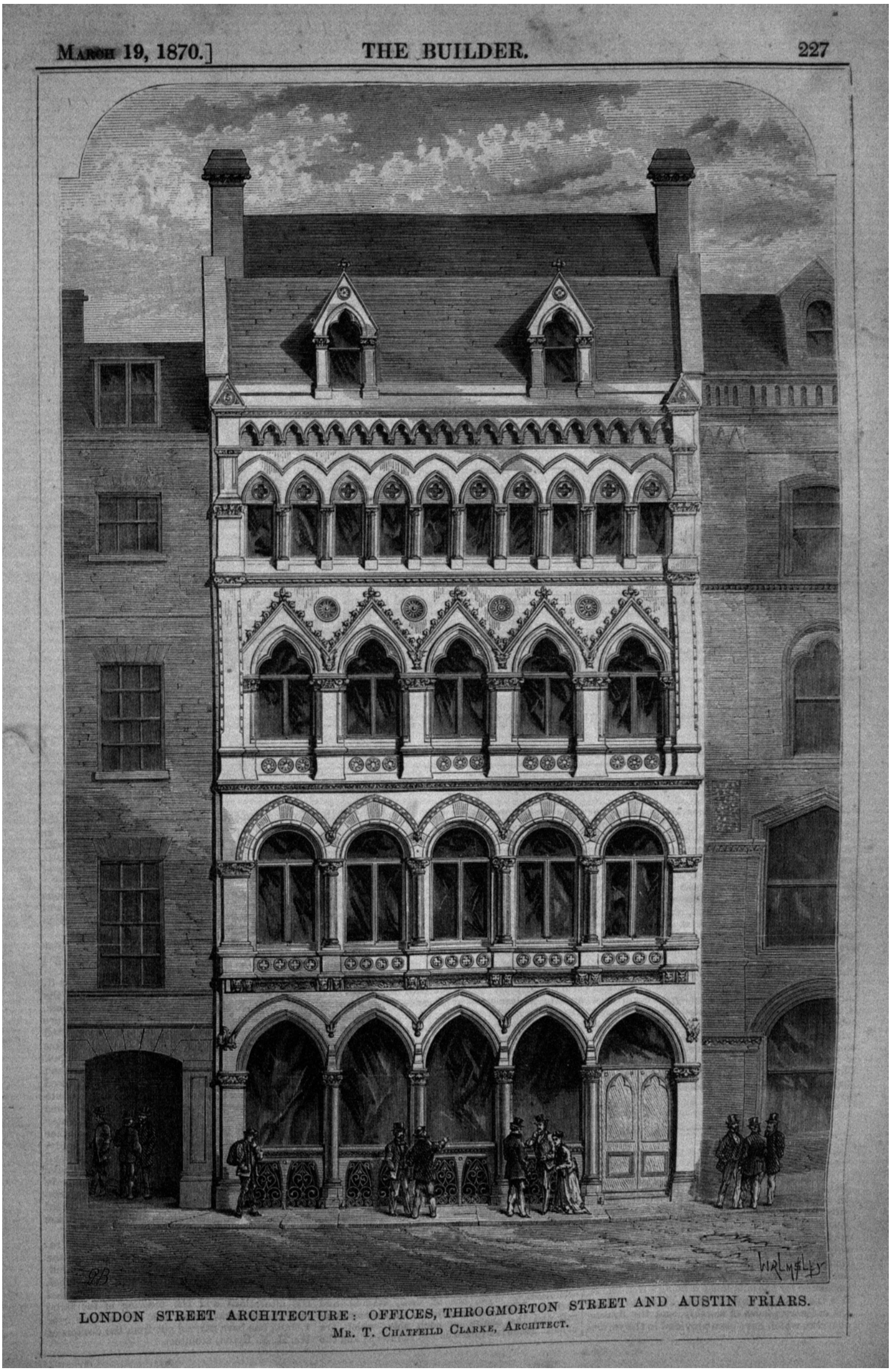
All the fittings, which are designed in a simple ecclesiastical style, are of deal, stained and varnished, with the exception of the Communion-rail and the chairs on each side, which are of oak. There is a raised dais at the stern; and the Communion-table is fitted into the bow of the ship, with a projection in the centre of 1 ft. 6 in. by 2 ft. 9 in. wide, with wings on each side with opened panel tracery-work lined with red cloth. The seats on each side are fitted into the side of the ship.

Accommodation is provided for 500 persons in forty-two seats in the body of the chapel, and six cross seats in the "chancel;" the dimensions being 88 ft. long by 35 ft. in the widest part.

The chapel is lighted by three circular pendants and two brackets in the chancel, gas being brought in under the bridge.

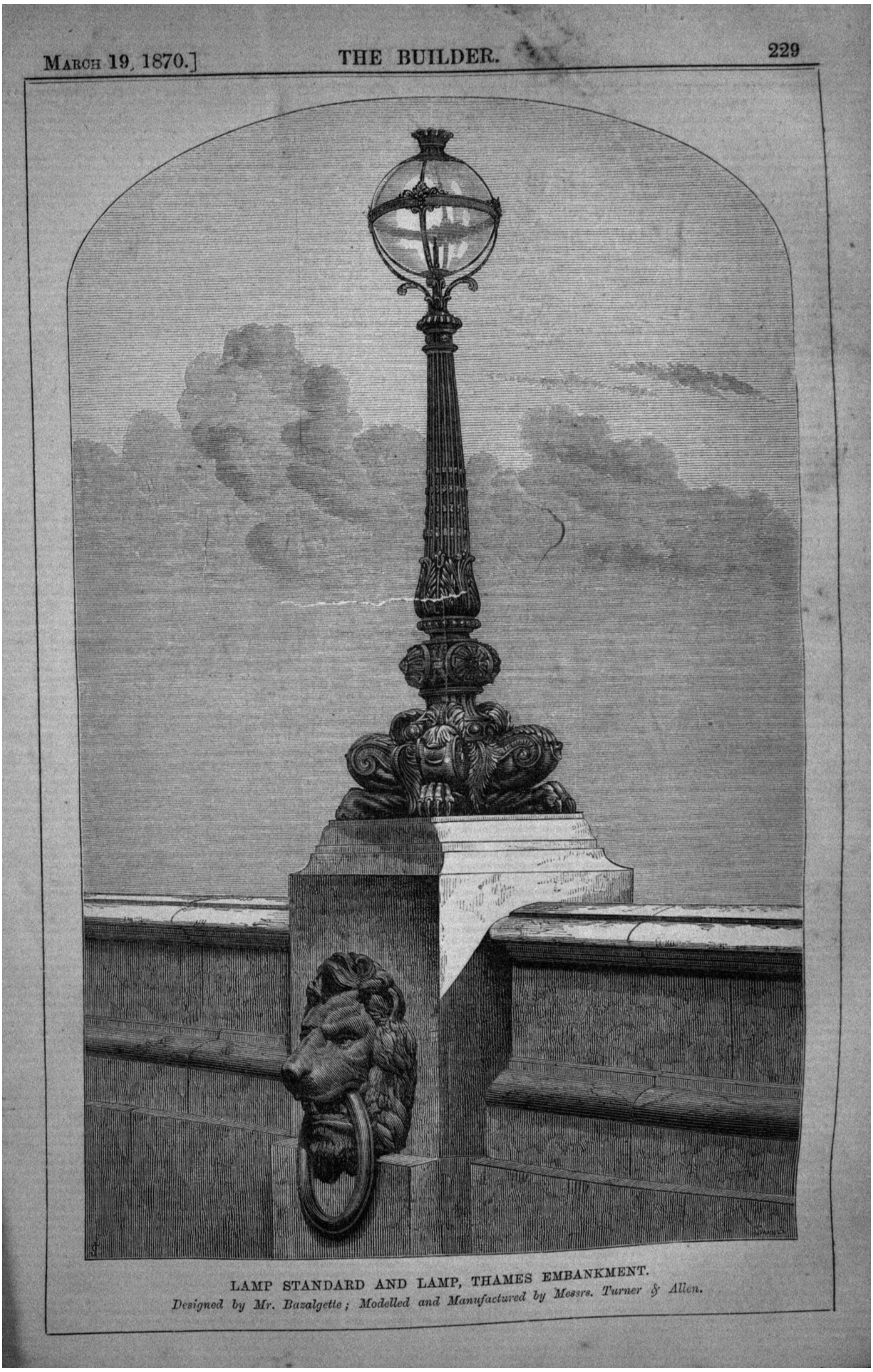
The residence for the chaplain comprises 30 ft. of the stern end. The bedrooms are on the main deck, which is divided into three rooms. The fittings of the bed-berth of the captain are preserved in one room, and the others are fitted up in a similar manner; one of the bedrooms serving as a vestry, with a door into the chapel. The bulwarks of the upper deck have been raised to 10 ft., and covered over with a flat roof covered with corrugated iron, and the space divided into four rooms and a water-closet; two of the rooms are fitted as a kitchen and scullery, the water being laid on similarly to the gas. The other rooms are fitted as a sitting-room and study. The bulwarks of the ship being 10 in. thick, and the new framing 3 in., the remaining 7 in. have been taken advantage of in forming closets in the kitchen, scullery, and sitting-room, and bookshelves in the study: all the rooms are lighted by windows hung on pivots, and the staircase and passage with a skylight.

Mr. Lambert, ship-builder, of the Cliff, removed the upper deck, built the roof, and the chaplain's residence and fittings. Mr. Cunnold, builder, did all the interior fittings of the chapel. Mr. Curtis, of the Ship-launch, superintended the alterations and the mooring of the ship; and all the work, which has cost a little over 1,000*l.*, has been carried out from the designs of Mr. H. M. Eyton, architect.



LONDON STREET ARCHITECTURE: OFFICES, THROGMORTON STREET AND AUSTIN FRIARS.

MR. T. CHATFEILD CLARKE, ARCHITECT.



LAMP STANDARD AND LAMP, THAMES EMBANKMENT.

Designed by Mr. Bazalgette; Modelled and Manufactured by Messrs. Turner & Allen.

LAMP STANDARDS FOR THE THAMES EMBANKMENT.

ADJOINING the somewhat elaborate standard designed and modelled by Mr. Butler, to which we referred in our last issue, two other lamp standards have been put up on the Embankment. One, which is merely in plaster, bronzed, has two entwined dolphins around the base of a column-shaft on a spreading pedestal, and carries an over-large lamp. This was designed by Mr. G. Vulliamy, the superintending architect, and produced by Messrs. Mabey. The modelling is anything but satisfactory, and scarcely does the designer justice. The other, designed by Mr. J. W. Bazalgette, and manufactured by Messrs. Turner & Allen, of Upper Thames-street, is in metal. This, it will be seen from our engraving, takes the shape of an antique candelabrum on a claw base; and, as a piece of pure conventional design, well drawn, modelled, and finished, will certainly bear repetition better than either of the others. The proportions of lamp and pillar are good, and the whole looks as if made for the place.

There is considerable merit in Mr. Butler's standard; and although we should be very sorry to see a repetition throughout the Embankment of his two young scamps, who, intended to typify the energy of the British nation, will simply be regarded by the public as vigorous young lamp-lighters, we shall be glad to find the Board using it here and there,—say at the landing-places,—the patterns being first carefully revised and, so far as the central column is concerned, refined.

LONDON STREET ARCHITECTURE: OFFICES, THROGMORTON STREET AND AUSTIN FRIARS.

THE building we illustrate is in the course of execution for Mr. Travers Smith, and has two fronts, one in Throgmorton-street, the other in Austin Friars. The style adopted is Venetian Gothic, somewhat modified in treatment to suit the position. The structure consists of basement, ground, first, second, third, and fourth or attic floors. The basement consists of offices and two double sets of inner and outer fireproof strong rooms, one of the principal inner ones for bullion being lined throughout with steel plates, and the whole being fitted with Chubb's bank fireproof doors.

The ground-floor is planned so as to utilise the light right through, with the addition of a large well-hole in the centre for light and air, the base of it being covered with external and internal iron skylights: the latter is a wrought-iron horizontal light of Gothic design, glazed with embossed glass, adequate provision being made for portions of the light to open with concealed machinery. The whole of the glazed screens and lobbies are executed in wainscot, French polished, of Gothic character, and glazed with embossed plate-glass of diaper pattern.

There are two staircases leading to the first floor; one for the use of a distinct suite of offices on the first floor, the other in the rear being for general use. The first staircase referred to is of oak, with oak handrails and balusters, carved and moulded in Gothic character. The staircase in the rear is of Spinkwell Yorkshire stone, fitted with an iron balustrade.

The whole of the first-floor is separated from the ground-floor by wrought-iron girders on iron columns and stanchions, and sub cast-iron girders, with arches in three and four rings respectively, of Cubitt's tiles, the spandrels being filled in with concrete, with flooring over it, to form an excellent fireproof floor.

The joinery is executed partly in wainscot and partly in deal, slightly stained and varnished. There are marble, Painswick, and inlaid chimney-pieces, and stoves to match in character.

The well-holes are lined with Minton's tiles, and the entrance-lobby is laid with a tile paving supplied by Messrs. Minton, Hollins, & Co. The ground-floor has the flat iron lath revolving shutters made by Messrs. Warren, Hands, & Co.

The exterior in Throgmorton-street is faced throughout with brown Portland stone; the rear front, to the height of the ground-floor, with the same; above which level are white brick-work and stone dressings. The Throgmorton-street front is supplied with polished Peterhead granite columns of red and grey on the ground and first floors respectively, and on the second and third floors with polished red and green serpentine columns. The carving throughout is executed by Mr. F. G. Anstey.

The windows below the stall-rails to each front are prepared for wrought-iron panel-guards, supplied by Messrs. Richardson, Slade, & Co., who have prepared all the iron ornamental work throughout. For ventilation of the offices and rooms, there is a system of flues with gas-jets at their mouths to give an upward current for carrying off the foul air, the fresh air being admitted through brass hit-or-miss gratings placed between the window-cills and floors; the fan-lights, too, are hung to transmit a current of fresh air through the offices.

The ground floor and front portion of the basement are specially planned to suit the requirements of Messrs. Raphael & Co., and are fitted up with wainscot counters and fittings; one set of the strong-rooms in the basement being planned for their requirements.

The contractors are Messrs. George Myers & Sons; the outlay being between 9,000*l.* and 10,000*l.* The architect is Mr. Thomas Chatfeild Clarke.

PROPOSED RESTORATION OF EXETER CATHEDRAL.

SIR,—In your issue of February 19th, you published the principal portion of a paper read at a quarterly meeting of the Exeter Diocesan Architectural Society, on the 10th of February, the subject of which was "The Adaptation of our ancient Cathedrals to the Usage and Service of the Church of England," and which bore special reference to the plans prepared by Mr. G. G. Scott at the request of the Dean and Chapter of Exeter for the re-arrangement of that cathedral. I have now to request that you will have the goodness to insert in your paper a copy of a memorial addressed to the Dean and Chapter, drawn up in consequence of a resolution passed at that meeting, and which is now being circulated for signature throughout the diocese; and also these [illegible]s of explanation as to the causes which have induced this society to take the unusual step of publicly calling in question the action of that venerable body in this matter.

About six or eight months ago it was publicly announced in the local papers that plans for the restoration of the choir of the cathedral, prepared by Mr. G. G. Scott, had been received by the dean and chapter, the principal features of which were the retention of the close rood-screen with the organ placed on it, in its present position; and next, the throwing open of the choir-aisles for congregational purposes by the piercing of the ancient stone parclose screens at the back of the stalls. This was the first public intimation given to the diocese of the intentions of the dean and chapter, although for years past the question of restoration has been occasionally brought up.

No public meeting has been held, nor have any steps been taken to ascertain the feeling of the diocese in such an important matter, and no communication has been held on the subject with the Diocesan Architectural Society, as might naturally have been supposed.

On the announcement being made in the papers of the scheme which the Dean and Chapter had in view, certain members of that society, feeling that one of the first and generally acknowledged principles of ecclesiological arrangement, that of the proper use of the choir or chancel of a church by the clergy and choristers only, would be set at naught if the barrier caused by the close rood-screen were suffered to remain, called a special meeting of the committee, at which it was resolved that a respectful memorial should be addressed to the Chapter, praying them to take into consideration the importance of maintaining this principle in any plans for re-arrangement that might be made. This memorial was accordingly sent to the Chapter in August of last year, but up to the present time no notice whatever has been taken of it, with the exception of a formal acknowledgment by the chapter-clerk of its receipt, and a statement made by one of the canons in answer to a direct question put to him at a committee meeting of the society some months since, that the memorial should secure the consideration of the chapter.

The society finding, after long delay, that their respectful remonstrance has produced no reply whatever, resolved at the last quarterly meeting to appeal to the diocese at large on a question respecting which it has an undoubted right to express its opinion.

It has lately been ascertained that Mr. Scott has abandoned his idea of piercing the stone screens at the back of the stalls (which would involve the removal of ancient monuments), but that he still adheres to his purpose of retaining the close rood-screen and organ; thus perpetuating the severance of the building into two distinct halves, in opposition to the arrangement he has adopted at Ely, Lichfield, Hereford, and other cathedrals, and which is wholly at variance with his report on the restoration of the choir of Salisbury Cathedral, just published.

I hope this plain statement of facts may induce some members of the profession to express their opinions on the matter.

PEARSON B. HAYWARD.

The following is the principal part of the memorial:—

"It has been announced in the public prints that our cathedral is about to undergo restoration, and it appears, from the plans which have been prepared by that eminent architect, Mr. G. G. Scott, that the chief features of the proposed restoration are as follow, viz.:—To keep the rood-screen and organ in their present position; to throw open the aisles into the choir by piercing the parclose screens on either side; to introduce new stalls for the choir; to remove the tombs of the ancient bishops and other worthies from the sides of the choir; thus making accommodation for massing a large congregation in the choir and its aisles, and filling them to their greatest possible capacity.

In reference to the proposed removal of the tombs, we beg to point out to you that the same plan was adopted by Mr. Wyatt in his restoration of Salisbury Cathedral in 1789, when the ancient tombs in that building were taken from their original sites and placed in the nave; an arrangement which is now universally condemned.

And as to the other part of the proposed restoration, we beg to record our protest against such a mode of arranging the choir of our cathedral. We would fain see the Mother Church of the diocese so disposed as to be a pattern to her daughters.

And we would, therefore, venture to pray your reverend body to adopt (as an alternative scheme) an arrangement similar to that carried out with such admirable effect and universal acceptance in the cathedrals of Ely, Lichfield, Hereford, Durham, Chichester, and Llandaff; where the solid screens have been removed: an arrangement which, while it preserves by open screen-work the ancient and legal divisions between nave and chancel, between congregation and choir, presents no obstacle to sight or sound, yet, renders the whole area of nave and transepts available for the accommodation of a large number of worshippers, and removes the complaint that this part of our cathedral is used as a fashionable lounge during the time of Morning and Evening Prayer."

VILE HOUSES IN MARYLEBONE.

THE medical officer of health, Dr. Whitmore, says in his last report,—

"If I were to report every house in the parish which in my conscience I believe to be unfit for human habitation, and which I also think cannot be rendered habitable by structural repairs, I should probably be considered by many as entertaining extreme opinions in regard to what may be termed sanitary requirements; and yet no one, who will take the trouble to visit the localities in which the more destitute classes are compelled to live, and examine the state of their dark, damp, smoky, low, and badly ventilated dwellings, can come to any other conclusion than that the occupany of such wretched tenements must necessarily be prejudicial to health. Within the last five or six years a very large amount of sanitary work of a permanent kind has been carried out. . . . But little or nothing has been done to improve the dwellings of the poor; these, under the decaying influences of time, but more particularly owing to the destructive habits of many who occupy them, are year by year becoming more ruinous and dilapidated, and from the growth of population, more densely crowded; the result, therefore, is, and inevitably must be, that the benefit to the health of the poor, which in all probability would follow from the sanitary improvements which I have referred to, is greatly, if not altogether, neutralised."

APPROPRIATION OF THE SITE OF NEWGATE MARKET.

AT the last Court of Common Council, a report was brought up from the Markets Improvement Committee that the market-house, shambles, &c., in Newgate Market had been pulled down and the materials sold. This having been done, the architect had prepared a plan for the appropriation of the vacant space, and the committee recommended that it should be let as building ground. By the architect's plan there would be a block of building with a roadway all round, and two passages 10 ft. wide traversing the building, one from north to south, and the other from east to west. The ground-floor would consist of sixteen shops, averaging 15 ft. wide and 35 ft. deep, and the first and second floors of offices and ware-rooms.

The building leases would be sold, and of the proceeds one-fourth would belong to the Dean and Chapter of St. Paul's, and the remaining three-fourths to the corporation, to purchase out the slaughter-houses and other nuisances in the neighbourhood. The report was adopted.

SIR,—A remarkable report has just been presented by the Markets Improvement Committee to the Common Council of the City of London. It relates to the mode in which the site of Newgate Market should be appropriated to the erection of dwelling-houses or shop or other buildings. It appears that the City architect, pursuant to directions, submitted alternative plans and designs, from which, after examination, the committee have selected the one now issued. The public are fully aware, from the ornamental new meat-market in Smithfield and other works of Mr. Horace Jones, that "Mr. Architect" is capable of making an appropriate design for such a purpose as this; but I venture to say that a more injudicious scheme than that selected could hardly have entered into the mind of any practical man, and it may be inferred that this project is due rather to his masters than himself. The area of the old market measures 148 ft. by 123 ft., and lies in the centre of an open space, 194 ft. by 148 ft., surrounded by buildings, with a pathway all round, of the average width of 12 ft. To the north there is Rose-street, leading out of Newgate-street into the area; and to the south a paved alley, leading from the area into Paternoster-row. One would have thought that the obvious duty of the committee would have been to take this favourable opportunity of making the commencement for a practicable communication from Newgate-street into Paternoster-row (which cannot be said now to exist), with the chance of such communication being eventually continued into St. Paul's Churchyard, there not being at present any such direct carriage thoroughfare. This opportunity is sacrificed; the passage through the block is only 10 ft. wide and 15 ft. high. There is, therefore, no direct light to the inner windows of the block, and the plan otherwise shows utter disregard of sanitary conditions; omnibus privies or W.C.s, one to every four tenements; liability to fire communicating from one part to the other; and complete defiance of the provision of the Building Act, which requires 100 ft. area to each tenement. Can all this be necessary to meet the question of light and air in regard to adjoining premises on east and west sides? Observe, too, the meanness of the "elevations" appended, and do implore the Common Council to ask the committee to reconsider the scheme before it is too late. AN ARCHITECT.

COMPETITIONS.

Wootton Bassett Cemetery.—The Burial Board have selected the designs sent in by Mr. Thomas S. Lansdown, architect, and have instructed him to proceed to carry out the work. The designs are fourteenth-century Gothic in style, and consist of two chapels, each 30 ft. by 18 ft. internal dimension, having open timbered roofs springing from stone corbels. The entrance to each of the chapels is surmounted by a bell-turret. The curator's house will be placed near the entrance, and will consist of parlour, kitchen, board-room, and offices, and also three good bedrooms. The architect will also lay out the grounds.

"THE LATE MR. W. BURN."

WE have received a courteous letter from Mr. W. Colling, who, from a connexion of 25 years, during which Mr. Burn was his "best friend and most excellent master," claims to be able to speak concerning him with accuracy, affirming that, in attributing to him "a wish to avoid criticism," we are "altogether in error." As, however, we received that statement from Mr. Burn's own lips, on more than one occasion, we are contented to abide by what we said. The writer adds that which we are quite willing to believe,—"Whenever Mr. Burn was asked to make designs for a building which did not come within the range of what he diffidently considered to be his limited practice and experience, he invariably recommended the employment of another architect, instead of himself. Moreover, he used the immense personal influence which he possessed to so much effect that, when a question arose as to the rejection of the services of one of his professional brethren, he on many occasions succeeded in bringing about a decision in favour of their retention. In short, I could point to some very extensive and most important works, which probably would not have borne their present architects' names but for Mr. Burn's exertions on their behalf. I could also mention the names of members of the profession who most undoubtedly owe a considerable part of their practice to his self-abnegation,—nay, I may say, to his absolute and immediate generosity."

THE ARCHITECT AT THE HOUSES OF PARLIAMENT.

A "SUBSCRIBER" writes thus:—

"The First Commissioner of Her Majesty's Works can have but a very faint idea of the routine and practice of the architect when he makes a demand or claim for the architect's designs, working drawings, &c. It is such a proposition as ought to be resisted, for if it were acceded to in the case of the architect to the Houses of Parliament, where is such a claim to end with reference to others engaged in large undertakings of public buildings, restorations of cathedrals, and such like. It is therefore desirable before such a claim is entertained that a meeting of the Royal Institute of British Architects should be convened."

We understand that the council of the Institute met on the 14th inst., and passed a resolution to the effect that by use and custom all drawings of a building belong to the architect. Mr. Cowper-Temple has given notice in the House of Commons that he will move for the correspondence between the First Commissioner and the architect, so that the whole case must now come before Parliament. There seems to be a general feeling that Mr. Ayrton will not be allowed to intrust such a building as the Houses of Parliament to the charge of his subordinates, who are not professionally qualified for such duties.

TAUNTON.

St. James's Tower.—The idea of restoring this fine Perpendicular tower has been abandoned, and an attempt will be made to rebuild it by public subscription. Mr. Houghton Spencer has been entrusted with the work.

Taunton and Somerset Hospital.—It having been considered desirable to add convalescent wards to this hospital, a special meeting of the governors was convened for ventilating the subject, when plans, and a report bearing on the question, by Mr. Spencer, were produced. Considerable difference of opinion being evinced, it was ultimately resolved to abandon the idea of rearing a substantial building, which the funds of the institution would hardly warrant, and to erect instead two detached and inexpensive iron wards, with a connecting corridor, which scheme the medical officers considered, at the best, but a doubtful experiment.

CURIOUS COINCIDENCES FOR OBSERVATION.

SIR,—Recently some notices of an interesting character have appeared in the *Builder* relative to the physical changes now in operation and taking place upon the surface of the earth.

I venture to point out that it would be expedient to make some simultaneous observations upon these physical changes in a systematic form, and to note the magnetic disturbances at the same instant, in different parts of the world.

The 18th of March, this year, will present a very curious series of combinations for critical observation, as to their mundane effects, by their simultaneous action; and it would probably be worthy of attention to ascertain the physical peculiarities developed at this date.

Although the combinations happen at the same time, it is quite possible that the effects may be delayed; or, in other words, not coincide with the exact date of their cause, just in the same way that it takes time for light and sound to travel to reach the senses of the observer.

We have yet to identify the influence of the *magnetism* of the sun, in causing the increase or decrease of the inclination of the axis of the earth, and its consequent effect upon climates, as the inclination of the axis of the earth to the plane of its orbit will never be brought about by the mere operation of gravity; but it is suggested as quite possible by the relative positions of the magnetic forces existing in unison simultaneously upon the surface of the sun, and the interior of the earth, that in certain positions of its orbit the inclination of the axis of the earth will be susceptible of remarkable change, and entirely modify the climate, not suddenly, but during the progress of ages.* Geological investigations confirm these anticipations as to the certainty that very different climates have existed at various periods upon the surface of the earth, and we have yet to learn when the changes will cease.

At noon, on the 18th March, 1870, some curious combinations and coincidences will solicit observation. The daylight and night are absolutely of equal length on that day. The sun is nearly in the equator. The moon, at noon, is in the equator, and at the same time at her nearest distance from the earth.

Under all these favourable circumstances of position it will only be the dynamic effects that will be first observed in the increased height of the tides, which will identify the forces in actual operation as mere mechanical action; the magnetic effects, however, having yet to be ascertained.

ARTHUR GEARING.

* We have repeatedly drawn the attention of geologists to the fact that the angle between the planes of the ecliptic and the equator of the earth is known to have been diminishing slowly from time immemorial until now; and to the capabilities of geological explanations as to the glacial and other eras which this fact affords.

SEWAGE IRRIGATION AND DRY SEWAGE MANURE.

SIR,—Mr. Rawlinson's arguments in favour of irrigation, as reported, at a recent meeting of the Society of Arts (see *Builder*, March 5), are not supported by his figures.

Speaking of the Sewage Farm at Aldershott, of 98 acres, he assumes the possibility of obtaining a gross return from the land of 200*l.* per acre by using irrigation, or for the whole farm a gross return of (98 × 200) 19,600*l.* per year.

Now granting this as a possible result, let us see what is the money value of the sewage used to produce it.

The quantity is stated at 200,000 to 400,000 gallons per day: take the mean, 300,000 gallons. This quantity, at 10 lb. per gallon, will be equal to 1,343 tons per day, or 490,195 tons per year.

Mr. Rawlinson spoke of sewage as worth 17*s.* 6*d.* per ton, but let that pass; he could only have referred to a special sample. My little calculation shows that 490,195 tons of sewage are to produce 19,600*l.*; how much, then, is it worth per ton? Just 9¾*d.* (ninepence three-farthings). I write the sum at length, in order to prevent mistake.

But suppose *only* 50*l.* per acre to be obtained, instead of 200*l.*, and a very good return, too, from an acre of land, what value will the land have extracted from a ton of sewage? Not quite 2½*d.* Surely the dry-sewage manufacturers can do as well as this, although Mr. Rawlinson says that they are attempting the impossible.

At all events, it is clear that irrigation with sewage, even in the "perfect" form in which it appears at Aldershott, is but a poor business after all.

A LESSEE OF SEWAGE.

COW CROSS CANADIAN EMIGRATION SOCIETY.

SIR,—In Cow-cross, or "Ragged London in the Centre," we have enrolled as members of the above society, four hundred families of able-bodied workmen, not paupers, nor persons of bad character, but steady, hard-working people,—artisans and labourers,—who are now reduced to a state of destitution, misery, and despair. There is no prospect of work for them; they have exhausted their little savings: they have withdrawn their funds from benefit societies; they have sold their furniture, and pawned their tools for food. "We speak what we do know, and testify what we have seen." Emigration is the safety-valve of the free-labour market. The Government of Canada will receive skilled and unskilled labour, *but not paupers*; 20,000 labourers and artificers would be sure of work over there. Surely, then, if work cannot be brought to where there is labour, we ought to send the labour to where there is work. State aid has been refused. The British and Colonial Fund offer to assist a limited number who can contribute 3*l.*, and upwards (single men, 5*l.*). But how can a penniless man with half a dozen children contribute 20*l.* *and upwards!* What, then, can my poor people do? Our workhouse is overcrowded. The burthen of poor-rates is becoming intolerable. I can no longer remain silent, and see the people perish without an effort to rescue some. To the benevolent at heart, and the Lord's people in particular, do we now appeal for aid to help the helpless. We have one thousand persons under our eye: 3,000*l.* will enable them to get from the land of despair to the land of hope.

Contributions will be thankfully received by Mr. Alexander Rivington, treasurer, Cow-cross Mission, 52, St. John-square, Clerkenwell; or by your obliged and faithful servant, WILLIAM CATLIN, Missionary.

PARLIAMENT STREET.

SIR,—Since the appointment of the present Chief Commissioner of Works, the public who take interest in matters connected with that department of Government, have from time to time been startled by the novelty and eccentricity of his proceedings. Many of your readers are no doubt aware that the Government have bought up the Northern "Island of Houses," separating Parliament-street from King-street, Westminster, in order to make a frontage to the new Home and Colonial Offices, and at the same time to widen the overcrowded thoroughfare of Parliament-street. The tenants have been heavily compensated for the inconvenience and loss of being hastily turned out of their shops and offices, and the money is hardly paid when those tenants who have not already removed are told that they may stop two or three years longer, the Chief Commissioner having decided to pull down the back parts only of the houses in question.

It is utterly inconceivable how any economy can arise from such a proceeding: it will evidently hamper the contractor in building the new offices not to have ample working room; but, as regards the public in general, it will be a serious inconvenience and expense. Parliament-street in the afternoon is now so crowded as to necessitate the services of ten or twelve policemen to regulate the traffic, and by the extraordinary arrangement proposed the whole of the traffic now passing along King-street will be added to the confusion.

A CONSTANT READER.

"The Science of Building."—Under this title Mr. E. Wyndham Tarn, Architect, will shortly publish an elementary treatise on the Principles of Construction, "especially adapted to the requirements of architectural students." It will be illustrated with 47 wood engravings.

Miscellanea.

The Martyrs' Memorial in Smithfield.—On Friday afternoon, the 11th, the ceremony of unveiling the memorial erected in Smithfield in honour of the martyrs to Protestant truth, and also for the purpose of indicating the precise spot on which they perished, took place. The memorial occupies one of the arched recesses in the external wall at the north-east corner of St. Bartholomew's Hospital, and consists principally of red and grey polished granite, the more ornamental parts having been executed in bronze. The head of the memorial is semi-circular in form, with a large ugly bronze shell in the centre, set off with mouldings. Between them is the text, "Blessed are the dead which die in the Lord." The cornice also consists of mouldings, and bears the text, "The noble army of martyrs praise Thee." This is supported by pilasters, between which there is a panel with the following inscription:—"Within a few feet of this spot John Rogers, John Bradford, John Philpot, and other servants of God, suffered death by fire for the faith of Christ in the years 1555, 1556, and 1557." On the base there is another inscription:—"Near this place is erected a church to the memory of the said martyrs." The whole is protected by a wrought-iron grille. Messrs. Habershon & Pite made and presented the design of the memorial, which has been executed by Messrs. Cox & Son, of Southampton-street.

Tewkesbury Abbey.—There is now every prospect of a thorough restoration of this fine old building. The committee have already received promises of subscriptions to the extent of 3,000*l.*, and a grant of 300*l.* is promised on behalf of the trustees of the Warneford Ecclesiastical Charity, with an intimation that a further grant may be made on the completion of the work. Mr. Scott has made a survey of the building, and he estimates that the following more urgent works may be completed for a sum of 4,850*l.*:—The cleaning and repairing of the stonework of the interior; the repairs of the roofs; the reflooring and repairing of the parts especially used for service; the removal of the partitions and of the organ, placing the latter upon a new screen or loft in the north transept; the removal of the old stall-work to the choir, with its entire restoration; the addition of canopies to such as require them; the adding of nine new stalls, with canopies, and of desk-fronts, &c., to the whole of the stalls; a new choir-screen, pulpit, lectern, &c.; and the complete seating of the church, so far as needed, and with some addition to the present reredos.

Town Hall, Stone.—The new Town Hall at Stone has been opened by a public dinner. The style of architecture is Italian, and the front of the building is faced with white bricks, Hollington stone being used for the windows and dressings. The chief door is in High-street. The large hall measures 60 ft. by 34 ft. 6 in., and 25 ft. in height. At one end of it is a platform, convertible into an orchestra. There are two brass pendants from the roof, and a third one is to be placed between them rather lower. It is estimated that the saloon will accommodate about 400 persons seated. In the rear of the hall is another entrance, and in proximity to it there are retiring-rooms and offices. Over the waiting-rooms and other parts of the building in the front there is a large library and reading-room, 36 ft. long by 16 ft. wide, a place for the librarian, and a cloak-room, with the usual offices. In the top story there are suitable sleeping and other rooms for the porter. The building has a frontage to the High-street of 50 ft. in length, and about 40 ft. in height, and rising above the parapet in the centre is a stone case for a town clock. The estimated cost of the building, without the fittings, is about 2,500*l.* Mr. Frederick Bakewell, of Nottingham, has been the architect; and Mr. Whittome, successor to Mr. Espley, of Stafford, the contractor. The site, which cost about 1,000*l.*, is that of the Old Blue Bell, and it would be in extent three-quarters of an acre. Nearly half an acre of ground remains to be used. The building has been erected by public subscription.

Royal Horticultural Society.—The Hyacinth Show, held on Wednesday last, in the Conservatory, in conjunction with Mr. W. Paul's annual show of spring flowers, which latter is continued during the week, was a success, and gave pleasure to a considerable gathering of visitors.

Girdled Trees bearing Fruit.—Our readers have heard of the atrocity of girdling some 1,500 fruit-trees near St. Joseph, Michigan, last spring, says the *Canada Farmer*, and how the neighbourhood turned out in a body and bandaged them up, so as to save them. It will be interesting and gratifying to learn that every one of these trees is living, and that Mr. Green, the owner, has realised an immense crop of fruit from them in the past season. Those wise in such matters explain it by saying that the interception of sap by girdling has caused the production of fruit instead of wood this season, and that the real trial for the life of the trees will come next year. It used to be thought that there was no help for a girdled tree; but that theory is now exploded. In this case the damage was remedied by bandaging the trees with strips of cloth dipped in wax. Mr. Lemuel Town, of New Hampshire, we believe, grafts five or six scions as large round as a goose-quill, and long enough to reach over the girdled place into the tree. The live bark is first notched above and below the girdle, the sprouts sprung into place, and the ends fastened with wax. These scions grow rapidly, and in time spread over the whole girdled surface. We have heard before of purposely girdling tree-branches, in order to increase their crop of fruit.

Edinburgh Architectural Association.—At the usual fortnightly meeting of this Association, Mr. Thomas Ross, president, in the chair, the business of the evening was a resolution moved by Mr. Wm. Beattie, architect, and seconded by Mr. Archibald Sutter, civil engineer, viz.:—

"That the different methods followed by surveyors in the measurement of work is productive of inconvenience and loss; and that, in the opinion of the Edinburgh Architectural Association, a uniform system of measurement should in future be adopted by all surveyors."

Mr. Beattie pointed out the evils resulting from the present want of uniformity, to the architect, the contractor, and the public generally. He advocated a more detailed and analysed system of measurement, and that the old practice of allowances should be entirely discontinued, and net quantities universally adopted. He contrasted the English and Scottish systems of measurement, and stated that the former was more minute and detailed in its dissection of the work. Mr. Ormiston, surveyor, criticised the remarks made by Mr. Beattie, and an animated discussion followed, in which Messrs. Paterson & Ross, architects, and Messrs. Lawrence & Russel, surveyors, took part. The resolution was unanimously adopted, and it was resolved to call a special meeting at an early date to take some practical steps in the matter.

Skilful Workmanship. — The King of Prussia recently visited a needle-manufactory in his kingdom, and was shown a number of superfine needles, thousands of which together did not weigh half an ounce, and marvelled how such minute articles could be pierced with an eye. The eye-borer asked for a hair from the King's head. He placed it under the boring machine, made a hole in it, furnished it with a thread, and then handed the needle to the king. The *Scientific American* says that a curious needle is in the possession of Queen Victoria. It was made at the celebrated needle-manufactory at Redditch, and represents the column of Trajan in miniature. Scenes in the life of the Queen are represented in relief, but so finely cut and so small that it requires a magnifying glass to see them. The Victoria needle, moreover, can be opened. It contains a number of needles of smaller size, which are equally adorned with scenes in relief.

Science, Religion, and Politics.—In our recent article on the Easter Island statues, we quoted the opinion of Professor Unger, of Vienna, at that time one of the greatest of living philosophers: we regret to learn that he has recently been found murdered in his bed at Graz. No trace of the murderer could be found; so a priest at Cilly asserted in the pulpit that the devil himself had probably murdered the professor, whose soul he could justly claim on account of his philosophical writings. M. Raspail, the well-known writer on botanical, agricultural, and chemical subjects, is the same as the "irreconcileable" M. Raspail, the political agitator.

London Corn Exchange Competition.—To the names of architects who were invited and are preparing designs should now be added, we are asked to say, that of Mr. G. Barnes Williams.

Lady Huntingdon's Chapel, Brighton.—The trustees have decided upon rebuilding this chapel upon a new plan; and plans, prepared by Mr. Wimble, of London, have been selected for the purpose. The new edifice, which is to be surmounted by a spire, is to be considerably higher than it is at present; and, by taking in a piece of ground at the side, the width will be increased by some 6 ft. There will be two Gothic windows, with circular light over, in the north front; and the entrance will be by three archways, provided with sliding shutters. At the south end it is proposed to have a large memorial window of stained glass, in memory of the late pastor, the Rev. Joseph Sortain. The interior of the chapel will be considerably altered and improved. There is to be no gallery, as at present, at the south end, but a small chancel built there, the organ being removed from its present position to the west side of the chancel; and the roof of the building is to be open, with a clearstory. It is thought that 4,500*l.* will cover the entire cost of the alterations, of which sum about 3,000*l.* have been subscribed.

Telegraphic Progress.— Submarine telegraphy is described as the mania of the hour, and, at all events, it competes as such with tramways. Telegraphic lines are being projected in every direction; but the most daring scheme of all is that just put forward for complete telegraphic submarine communication with Canada (double line), Bermuda, West-Indies, Demerara, Ascension, St. Helena, Cape of Good Hope, Natal, Mauritius, Ceylon, India, Australia, Tasmania, and New Zealand, by 24,000 miles of continuous cable, without landing upon the shore of any foreign country. The cost of this modest undertaking is put down at about 4,000,000*l.* and it is suggested that the Imperial Government and the colonies should guarantee a dividend of 3½ per cent. on that outlay. It is further proposed that this girdle round the earth should be hooked on to the present system of postal telegraphs,—an addition to his present labours which Mr. Scudamore might very fairly be expected to object to—at least until he has fully mastered what he has already undertaken.

The Opening of Kingston Bridge.—On Saturday, in the presence of the Lord Mayor and sheriffs, the lord high steward of the manor (Lord St. Leonards), Sir John Thwaites, chairman of the Metropolitan Board of Works, the members of Parliament and magistrates for the county of Surrey, the mayor, and the rest of the municipal authorities, with many other persons of consideration, the bridge across the Thames at Kingston was opened to the public free of toll, under the provisions of a recent Act of Parliament, by which part of the coal and wine dues levied by the Corporation of London is for a limited time to be applied to the gradual abolition of the tolls payable at the various suburban bridges on the Thames. Great preparations in the town and neighbourhood were made on the occasion, and the whole population for miles round turned out to witness the ceremony. Triumphal arches were erected in different parts of the town, and upon the bridge itself, which was also decked with evergreens and flowers.

Royal Italian Opera.—The Royal Italian Opera, Covent Garden, will open on the 29th, with Mesdames Patti, Lucca, and Titiens, and Messrs. Wachtel, Naudin, Mario, and Graziani, amongst its old acquaintances, and a number of promising new engagements. "Esmeralda," the composition of Signor Campana, the libretto being founded on the romance of Victor Hugo; "Medea" (*Jason* by Dr. Gunz, and *Medea* by Madlle. Titiens); and "Macbeth," supported by Signor Graziani and Madlle. Titiens, are amongst the novelties promised. Signor Vianesi will be the chief conductor, the orchestra remaining nearly as before. A strong programme has issued from Drury-lane, and the Covent Garden directors will have to keep their eyes open to maintain supremacy.

Society for the Encouragement of the Fine Arts.—On the 10th inst. the second *conversazione* of the season was held in Conduit-street, when, in addition to the attraction of the pictures in the gallery of the Society of Female Artists, there was an exhibition in an adjoining gallery of a considerable collection, amounting to upwards of 200 drawings and sketches of the late Mr. James Holland. After a short address by Mr. S. Solly, F.R.S., in which he paid a tribute to the memory of the artist, a musical entertainment was given, under the direction of Mr. Alfred Gilbert.

Accidents.—A workman, while painting the exterior of No. 31, St. Paul's-churchyard, fell from a scaffold 40 ft. high, smashing his skull completely. He had only that morning applied for and obtained work on the job, and appeared to be in a state of great destitution.——The Roman Catholic chapel (St. Mungo's), in Parson-street, Glasgow, has been on fire. The fire-brigade, however, extinguished the flames in a very short time. It appears that the fire had originated in the boiler-room, which is on the ground flat of the building, and is used for raising steam to heat the chapel, while immediately above that is the wardrobe-room. The fire had smouldered for some time, and when the alarm first spread the chapel was filled with smoke. The floor of the wardrobe-room was burned, and the wardrobes destroyed, but fortunately the fire was confined to that apartment. The church is quite new.

The Projected State Railways in India. In the House of Commons, the Under Secretary of State for India, in reply to Sir D. Wedderburn, said that the duty of constructing the railways would be entrusted to the Public Works Department; that there was reason to believe the officers of the Engineer Corps referred to were incompetent; and that the Government of India had a heavy stake in the completion of the works in the best possible manner. Whether the materials would be transmitted through the Store Department was under consideration. In reply to Mr. Roden, Mr. Duff said that not more than 3½ millions would be expended in any one year. Up to the present time the Government had no information as to the amount proposed to be expended this year. What number of miles of railway the Government proposed to construct in India he could not say.

The Pollution of the Avon.—The Rivers Commissioners have had an interview with the Bath Local Board of Health upon this subject, a special meeting of the Board having been summoned for the purpose. The commissioners explained that the object of their visit to Bath was to inquire into the state of the river and the extent of the water supply, and expressed their readiness to receive information upon the subject. The Local Board intimated their willingness to assist the commissioners in their inquiry, and instructed the city engineer to afford them all the assistance in his power.

The City Sewers Commission Report.—The report of Mr. Haywood, the engineer and surveyor to the City Sewers Commission, on the works executed during the past year, has been printed. Under the head of Improvements, various useful works, as widening streets, &c., are recorded as either done, partly done, or arranged for. The widening of the Poultry by setting back the front of St. Mildred's Church, is noted as agreed for with the ecclesiastical authorities. The negotiations for widening St. Paul's Churchyard, on the western front of the Cathedral were still in hand. Seven houses in Three-King-court, Minories, have been demolished as uninhabitable. The site for a mortuary to be erected by the Commission has been obtained.

More Discoveries of Roman Remains near Bath.—In the course of the excavations for the foundations of the new church in West Walcot, some Roman remains have been brought to light. In sinking for the tower, the workmen found on the north side a skeleton, and on the south side some calcined bones, what seemed to be the remains of a child, and the urn in which they were deposited. Beneath these, and at a depth of several feet below the surface, another skeleton, quite perfect, was exhumed, and near what will be the south wall of the church a piece of masonry was exposed to view, which seems to be the external wall of a Roman villa. A piece of stone cut in the shape of a pinesapple, probably an ornament of some kind, is also amongst the relics.

Popular Instruction at the Public Museums. — The Working Men's Club and Institute Union have, with permission of the authorities, arranged for a series of visits to the national museums on Saturday afternoons for the members of workmen's clubs. In each case the party will be under the guidance of some gentleman specially qualified to afford instruction in one particular branch of science and art. A party of fifty workmen were thus enabled to pay a visit to the Egyptian Department of the British Museum on Saturday, under the guidance of Mr. Samuel Sharpe.

A Granite Monument in Harrow Churchyard.—Of the monuments recently erected in the churchyard of Harrow-on-the-Hill, the monolith placed upon the Leighton family vault is not the least remarkable, considering its material, great weight, and the quantity of workmanship thereon, apart from its site, and the difficulty of posing it there. It was executed at the works of Messrs. Newall, Dalbeattie, near Dumfries. The design of the monument is spoken of as Mr. Leighton's own. The three gables it was intended to decorate with painted faïence, though now it is thought mosaic will be more durable; thus the work will be rendered either at the Vatican works in Rome or in Venice.

A Double Plough.—North-country farmers, who could not afford the expense of the steam-plough, have lately been turning their attention to ploughs drawn by a single team, and managed by one man, but turning over two furrows at a time. There have been two public trials, got up by the farmers of Cumberland, at Whitehaven and Aspatria. No less than a dozen implements were submitted for competition, constructed by several different makers. Nearly all the work was well done, and the success of the double plough was considered as established. The first prize at both trials fell to the lot of Messrs. Howard, of Bedford, for a light and simple implement carried on three wheels.

A Portable Motive Power for Machinery. At the last exhibition of the American Institute, it seems, there was shown an elliptic lockstitch sewing-machine driven by an electric engine small enough to fit into a common hatbox. As described to us, a series of eight magnets are set on the periphery of a circle, and around these revolves an armature of steel which is continuously propelled by the magnetic action, and thus operates the machinery that moves the needle. Connexion with this motor is had by means of a small slide within reach of the operator, at whose will the current may be cut off entirely or the speed of the needle graduated as may be desired.

The Portsmouth Main Drainage.—Contract No. 1 with Mr. F. Furniss has been completed to the entire satisfaction of the corporation, who have passed a vote of thanks to the contractor, and are preparing a testimonial to him under the seal of the corporation, in accordance with the vote passed. The corporation believe that while the contractor has faithfully carried out his contract it has not financially been to him a very good undertaking. The No. 2 contract has been completed and settled up to the extent of 33,000*l*. The sum total of the first contract is 54,728*l*. Mr. Furniss is about to carry out a large contract in connexion with the cattle market at Chichester.

The Tewkesbury Water Supply.—The Cheltenham Waterworks Company decline to supply the town with water on the terms proposed. They say, "In reply, the company desire to remind the inhabitants of the heavy expense which the company have incurred in introducing an abundant supply of water in the borough of Tewkesbury, and the probable inadequate return for many years, at the rates proposed by the company, for the capital expended; and the committee regret that they cannot accede to the views expressed in the resolutions submitted to them."

Prevalence of Fever in Birmingham.—At the last weekly meeting of the Visiting and General Purposes Committee, held at the Workhouse, Mr. Bridge presiding, Mr. Walker, chairman of the No. 4 District Committee, drew the attention of the meeting to the prevalence of fever in several streets in that district, including Thomas-street, John-street, London 'Prentice-street, and Park-street. The relieving officer informed him of the numerous cases of fever in the lodging-houses in some of the streets he had just named. We are not at all surprised.

Science Schools at Rugby.—Recently we gave particulars and illustrations of the new laboratory at Eton. It may be useful to mention that *Nature* of March 10th, contains an interior view of the laboratory at Rugby, with particulars of the science schools generally, and a plan. These schools are part of an extensive block of new buildings erected from the designs of Mr. Butterfield.

A Useful Gift.—Mr. Joseph Pease has presented a steam fire-engine, worth 700*l*., to the town of Darlington.

Road Locomotives.— Mr. R. W. Thomson, C.E., of Edinburgh, has invented "a road steamer," which possesses the extraordinary power of not only running over any kind of road, whether hard or soft, whether muddy or slippery, but also of dispensing with a road of any kind. It can run with facility over grass fields, ploughed fields, upon ice, through sand, and over frozen snow. It owes this faculty to tires of vulcanised india-rubber on the wheels. The engine runs on three wheels—two large ones of great width, and a smaller one in front; and these wheels are surrounded by very thick bands of india-rubber, which are guarded by flexible shields, formed of open steel bar, to give it a "bite" upon the ground. The shields are removable, and are taken off when the road steamer has to pass over ice, snow, or sand. The performances of these iron elephants are really remarkable. One of them has run out from Edinburgh twelve miles, brought back a load, traversed the narrow streets of the old town while thronged with vehicles, turned all manner of sharp corners, and passed through the gates of a factory.

Institution of Naval Architects. — This institution will open its annual general meeting on Wednesday, the 6th of April, in the Lecture Theatre of the South Kensington Museum, which has been placed at the disposal of the members by the courtesy of the Committee of Council on Education. The remaining three days of the week the institution will meet as usual, through the permission of the Society of Arts, in their Great Hall, in John-street, Adelphi.

Burns's Howf.—The Globe Inn, Dumfries, which used to be frequented by the poet Burns, and which still contains the chair in which he used to sit, was last week offered for sale by public auction, at the upset price of 700*l*. There were no bidders, and the sale was adjourned for a fortnight. It is thought that it will be purchased before then by private bargain at a lower than the upset figure.

Improved Building Appliances.—*Price's Patent Sash-fastening* cannot be opened from without, a considerable advantage. The improvement in *Stanbury's Stench Trap* consists in this, that the top or grating is attached to the bell by a hinge, so that although it may be raised to clean out the bell, a careless scullerymaid cannot remove it permanently, and so allow the house to be poisoned with sewer gas.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, March 7th, the adjourned discussion on the paper by Mr. E. P. Squarey, entitled "Farming Covenants," was resumed, and after a lengthy debate was again adjourned to March 21st. On that date, also, a paper will be read by Mr. J. Matthews, entitled "A Plea for Culture in the Profession of a Surveyor."

The Surveyorship to the Lavenham Highway Board.—At the last meeting of this board a motion was made that advertisements be issued for a surveyor, at 225*l*. a year. An amendment, however, that a resident surveyor at Lavenham, with a salary of 180*l*., and an assistant at Boxford with 120*l*., be advertised for was carried.

Removal of the Royal Mint.—In reply to Mr. J. B. Smith in the Commons, the Chancellor of the Exchequer said the Government hoped to mature a scheme by which the Mint would be removed rather more to the centre of the metropolis, and to dispose of the present site on Tower-hill to great advantage.

A Larger Organ than Ever.—The largest organ in the world, says the *Musical Standard*, will be the organ now building by Willis for the Hall of Arts and Sciences, South Kensington. "It will have 111 sounding stops, independent of 14 couplers,—an absurd multiplication." Why absurd?

Diamonds.—Professor Tyndall has succeeded in igniting a diamond in oxygen by the concentrated rays of the electric light, according to the *Academy*. The professor has no doubt, it seems, of his ability to ignite the diamond by the invisible rays from the same source.

Fire in the Palace at Pekin.—A wing of the Emperor's Palace in Pekin has been burned, containing the imperial printing-office, with large stores of books and block-types. The books printed at the imperial cost for the last two centuries have issued from this office.

Metropolitan District Railway.—At a meeting of the City Commissioners of Sewers it was resolved, by a large majority, to oppose not only the Bill of the Metropolitan District Company for abandoning the line to Tower-hill, but the construction of a new station at the Mansion-house as well.

TENDERS.

For the erection of the coach-house and stabling at Westwood House, East Dulwich. Mr. J. H. Rowley, architect:—

Snowden	£345	0	0
Crabb & Vaughan	312	0	0
Dowell	306	0	0
Lennard	298	0	0
Shepherd	185	0	0
Munday (accepted)	165	0	0

For the erection of St. James's Parsonage House, London-road, Clapton, for the Rev. G. P Irby. Mr. Chester Cheston, architect:—

Rivett	£2,993	0	0
Brett	2,798	0	0
Henshaw	2,635	0	0
Crabb & Vaughan	2,598	0	0
Newman & Mann	2,486	0	0
J. & F. J. Wood	2,480	0	0
Lewis	2,445	0	0
Shurmur	2,444	0	0
Morter	2,442	0	0
Fisher	2,050	0	0

For erection of dwelling-house and offices at Pinner, for Mr. T. W. Goodall, R.A. Mr. R. Norman Shaw, architect. Quantities by Messrs. Franklin & Andrews.

Little	£5,979	0	0
Patman & Co.	5,685	0	0
Humphrey	5,475	0	0
Trollope	5,438	0	0
Carr & Son	5,270	0	0
Simpson	5,163	0	0
Browne & Robinson	5,145	0	0
Rider	5,080	0	0
Birch	4,987	0	0
Newman & Mann	4,983	0	0
Cowland	4,887	0	0
Jackson & Shaw	4,595	0	0

For the erection of a chapel of ease to St. Paul's Church, reston. Messrs. Myres, Veevers, & Myres, architects:—

Alston	£1,176	0	0
Cooper & Tullis (accepted)	1,076	6	11
Plumbing.			
Deahurst	36	0	0

For the erection of a county police station at Fulwood, Preston. Messrs. Myres, Veevers, & Myres, architects. Quantities supplied:—

Jackson	£1,073	0	0
Saul	1,037	0	0
Alston	996	0	0
Christian	973	0	0
Cooper & Tullis	939	14	3
Tomlinson	905	0	0
Clayton	880	0	0
Turner (accepted)	849	0	0

For building warehouse, Wood-street, Cheapside, for Mr. M. Da Costa Ondiade. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Batstone & Hunt:—

Myers & Sons	£1,936	0	0
Collier	1,807	10	0
Moultrie	1,743	0	0
Henshaw	1,739	0	0
Ebbs & Sons	1,606	0	0
Merritt & Ashby	1,541	0	0
Newman & Mann (accepted)	1,515	0	0

For Chichester new cattle market:—

No. 1 Contract.—Market Site, &c.

Kelsey	£11,157	7	0
Marshall	10,117	7	4
Blackmore	9,206	12	0
Bushby	8,419	0	0
Neve & Fry	8,167	0	0
Quick	8,012	14	3
Bramble Brothers	7,929	12	2
W. R. & C. Light	7,918	6	5
Vicars & Crane	7,887	15	11
Ward	7,870	8	9
Burbridge	7,362	4	0
Wilcox	7,275	15	5
Sanders	6,966	0	0
Smith	6,787	8	0
Cooper	6,561	9	1
Sharon	6,159	19	8
Coker	6,158	13	7
Sibsey	6,143	1	4
Barnes	5,799	8	0
Furniss*	5,477	13	3½

* Accepted, subject to certain deductions and omissions.

No. 2 Contract.—Ironwork.

Hobbs	£4,264	12	3
Burmish	3,668	8	9
Newton, Chambers, & Co.	3,505	2	9
Wood	3,303	4	11
Sanders	3,268	0	0
Adames & Grant	3,019	7	10
Thomson & Co.	2,990	0	0
Hill & Smith	2,944	4	11
Gimson & Co.	2,904	0	0
Coker	2,791	15	4
Jukes, Colson, & Co.	2,752	3	0
Morton & Co.	2,528	5	0
Spencelay & Archer	2,525	5	0
Sperring	2,522	12	0
Hopkins & Co.	2,418	11	0
Kenard Brothers	2,4[illegible]3	0	8
Sibsey	2,295	15	10
Furniss	2,285	15	0
Gagal	2,275	18	0½
Rowell & Co.	2,267	4	10
Topham & Co.	2,2[illegible]2	4	6
Bayliss, Jones, & Bayliss	2,172	19	0
Cliff & Co. (accepted)	2,107	4	1
Williams & Bolton	1,993	5	4

For St. Mary's Church, Apsley End, Herts, for Mr. Charles Longman. Mr. J. Clarke, architect:—

Roberts	£5,350	0	0
Bell & Sons	4,730	0	0

For alterations at Dunster House, Rochdale, for Jonathan Nield. Mr. Joseph Clarke, architect:—

Seedell (accepted)	£1,100	0	0

For second portion of nave and aisles restoration, St. Clement's Church, Sandwich, Kent. Mr. Joseph Clarke, architect:—

Wilson	£1,072	10	0
Denne	993	0	0
Adcock	948	0	0
Shrubsole	947	0	0

For St. Michael's Church, Bishop Stortford. Mr. J Clarke, architect:—

For first portion of works carried out:—

Tooley	£3,231	13	6

For new north aisle to chancel (without seating), and rebuilding vestry:—

Tooley	£1,380	0	0
Bracher & Sons	1,300	0	0
Roberts	1,195	0	0
Gibbons	1,097	0	0
Mason & Green	1,089	0	0
Glasscock	1,025	0	0
Cooke	948	0	0
Bell & Sons	927	0	0

For building new north aisle, sacristy, and porch, and enlarging sanctuary of the Church of St. Peter, at Folkestone, and raising the present roof an extra height of 5 ft. Mr. Spencer Slingsby Stallwood, architect:—

	With porch and credit old materials.	Without porch.
Brooks & Slade	£1,683 0 0	
Baker	1,388 1 9	£1,240 9 11
Adcock	1,237 3 10	1,124 6 8
Prebble	1,220 0 0	1,107 0 0
Bowley	1,127 0 0	1,029 0 0

For erecting two chapels, lodge, entrance gates, &c., and forming roads for the Ventnor Cemetery. Mr. Francis Newman, architect. Quantities supplied:—

	Including providing water for the Works.	If water provided by Board.
Langdon	£1,700 0 0	£1,690 0 0
Lale	1,496 0 0	1,486 0 0
Sibley	1,419 0 0	1,410 0 0
Wickens	1,387 0 0	1,367 0 0
Moses & Wallder	1,376 0 0	1,351 0 0
[illegible]	1,363 0 0	1,330 0 0
[illegible]	1,125 0 0	1,105 10 1

For the "Bag of Nails" public house, Loughton. Mr. D. A. Cobbett, architect. Quantities by Mr. Mortimer:—

Holden	£1,594	0	0
Newman & Mann	1,556	0	0
Withers	1,530	0	0
Rivett	1,471	0	0
Crabb & Vaughan	1,379	0	0
Egan	1,330	0	0
Harris (accepted)	1,297	0	0

For pulling down and rebuilding part of Broomfield Hall, Sunningdale, Berks, for Mr. Thomas Holloway. Mr. John Dale, architect:—

Nutt & Co. (accepted)	£9,138	0	0

For Islington Workhouse. First portion of fittings for casual wards. Mr. R. H. Burden, architect:—

Nutt & Co. (accepted)	£300	0	0

For the erection of billiard-room and new kitchen wing to Holwood House, Walton-on-Thames, for Mr. James Puzey. Mr. Charles Bell, architect. Quantities not supplied:—

Rankin	£525	0	0
Fennington (accepted)	411	0	0

For teacher's residence, and other works, at St. Paul's Parochial Schools, Anerley. Mr. Elkington, architect:—

Langman	£714	0	0
Tarrant	685	0	0
Crossley	667	0	0
Wright Brothers	665	15	0
Rudkin	655	0	0
Kirk	633	0	0
Aitchison & Walker	577	0	0
Parsons & Telling	542	0	0
Hollidge	540	0	0
Shirley & Horn	488	14	0

For female infirm wards at St. Luke's Workhouse, for the guardians of the Holborn Union. Mr. H. Saxon Snell, architect. Quantities supplied:—

Wilson	£12,250	0	0
Myers & Sons	11,888	0	0
Cowland	11,770	0	0
Colls & Sons	11,733	0	0
Perry & Co.	11,559	0	0
Perry Brothers	11,447	0	0
Hill, Keddell, & Waldram	11,382	0	0
Hart	11,250	0	0
Ebbs & Sons	11,146	0	0
Manley & Rogers	10,817	0	0
Bull & Sons	10,799	0	0
Lathey Brothers	10,430	0	0
Crabbe & Vaughan (accepted)	10,085	0	0

For hydraulic lift and sanitary fittings at the female infirm wards at St. Luke's Workhouse. Mr. H. Saxon Snell, architect. Quantities supplied:—

Potter & Sons	£1,398	0	0
Benham & Sons	1,385	0	0
Jeakes & Co.	1,277	0	0
Turner & Co. (accepted)	1,217	0	0

For house at Hadley. Mr. S. Dickins, architect. Quantities by Mr. L. C. Riddett:—

Burchell	£1,550	0	0
Manley & Rogers	1,497	0	0
Macey	1,489	0	0
Scrivener & White	1,438	0	0
Scrivener & Stevenson	1,367	0	0
Walton	1,349	0	0
Capps & Ritso	1,295	0	0

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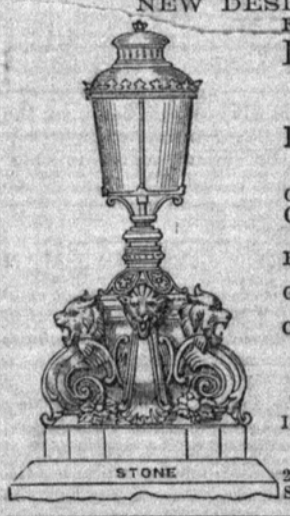

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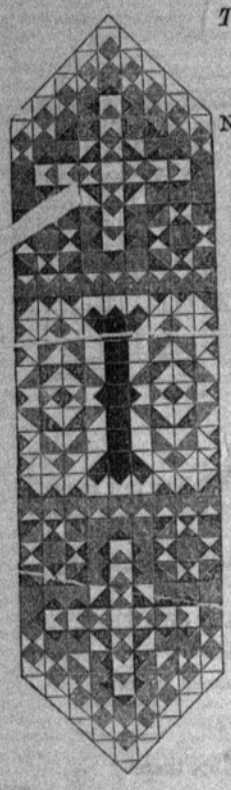
The Builder.

VOL. XXVIII.—No. 1416.

*The Arts in the Middle Ages and in the Renaissance.**



IN Paris, twenty years ago, a costly French work, in five quarto volumes, on the Middle Ages and the Renaissance, made its appearance, under the auspices of M. Lacroix, who was assisted in its production by several French writers and artists of reputation. From this handsome work the same author has recently selected the sections relating to the arts; and these he has published in one brilliantly illustrated quarto, under the title of "The Arts in the Middle Ages and at the Period of the Renaissance;" which volume is now translated for the benefit of the English public. And a very attractive, well-stored, skilfully-prepared volume, thanks to Mr. James Dafforne, the English public will find it to be.

The arts which M. Lacroix discusses in it are many. He divides them into twenty sections, which we will enumerate that our readers may judge at once of the comprehensiveness of the contents of his work. Beginning with furniture, he next treats of tapestry, then of ceramic art, arms and armour, carriages and saddlery, gold and silver work, horology, musical instruments playing-cards, glass-painting, fresco-painting, painting on wood, canvas, &c., engraving, sculpture, architecture, parchment and paper, manuscripts, miniatures in manuscripts, bookbinding, till he arrives, finally, at printing. The order of this review of the arts is somewhat curious; but it is adopted, we presume, to bring into sequence those arts that have evolved into others, with their respective developments. The fact that the work was first published twenty years ago detracts only from its freshness. Views advanced in it, and information then furnished for the first time, have in the interval found very general acceptance. But they are none the less valuable on that account; and this new form will enable many to consider them to whom the five French quartos would be only as so many sealed vessels. In one instance, at least, an addition has been made to the original stock of facts, for among the illustrations is a reproduction of M. Viollet-le-Duc's representation of a nobleman's chamber in the fourteenth century, in his "Dictionnaire Mobilier," a work published subsequently to that of M. Lacroix. In another, however, a recent discovery that might well have been engrafted, has either been overlooked, or has not yet come to the knowledge of the author. We allude to the unravelling of the secret of the seat and source of the scarce Oiron faïence, mentioned by M. Burty in his work on the "Chefs-d'œuvre of the Industrial Arts," and detailed in these columns in our notice of Mr. Chaffers's translation of that work. But, take it "all in all," the merits outweigh drawbacks; and those wistful of a dignified introduction to the circle of the industrial arts will do well to avail themselves of M. Lacroix's presentation.

The fourth century is fixed upon as the commencement of the period to be illustrated. Relics of this date are scarce; which fact is not so surprising as that there are any at all, perhaps; though we are apt to consider that we ought to account for it, when we remember the comparative profusion of Greek and Roman remains of an earlier time. The miniatures, too, in manuscripts, that furnish us with so many examples of ancient forms in furniture further on, are still scarcer at this date, two or three only being in existence. In the item of chairs, for instance, it is difficult to cite many specimens before the days of Charlemagne. St. Eloi, the celebrated bishop and worker in metals, is recorded to have manufactured two gold state chairs for Clovis, and a gold throne for Dagobert. This last is supposed to be identical with the curule chair, called the Fauteuil de Dagobert, in gilt bronze, now in the Musée des Souverains, which was originally a folding-seat, to which the Abbé Suger, in the twelfth century, added a back and arms. M. Lacroix gives an illustration of it. For a second early example, he is driven to a miniature of the ninth or tenth century. In tables, there is the same dearth. Miniatures of the last-mentioned date are the earliest authority. But the first example in the work before us shows the round table of King Artus of Brittany, from one of the fourteenth century, preserved in the Imperial Library, Paris. This table is not round, in our acceptation of the term; for though of a circular circumference, it has a circular space in the centre, in which the pages stood and waited upon the guests; and for access to this centre there was, necessarily, a passage-way left in the circumference. The seats surrounding it appear to be fixtures, divided only from one another by elbow-pieces. Eleven figures are seated at the banquet represented, of whom five wear crowns, and a sixth has some ornamentation round his neck that looks exceedingly like another. Notwithstanding this display of regal magnificence, a knife each is the only accommodation provided with which to partake of the meal; and the presence of two dogs, one of which is gnawing a bone, is another suggestive indication of rough manners. In kitchen contrivances and implements, too, there is a scarcity till we come to the thirteenth century. Nevertheless, with selections from examples of this and succeeding centuries, and notes of casual mention of articles of furniture by the early historians, poets, and romancers, a goodly group of facts is got together.

The chapter on tapestry is well written and well illustrated. The association of this art with dames of the highest rank in all ages, gives it an additional interest. M. Lacroix brings forward instances in which the production of tapestry and embroidered hangings was also carried on in ecclesiastical establishments, for the decoration of the churches attached to them. But here, again, though we know that from the days of Minerva, downwards, the heroines of Homer and Roman ladies employed themselves on this work, the earliest specimens presented for our examination are three portions of the Bayeux tapestry, traditionally supposed to be the production of Queen Matilda, wife of William the Conqueror. The credit of this piece of workmanship,—which, though only 19 in. in height, is scarcely less, it will be remembered, than 212 ft. in length, and contains 530 figures,—is, however, transferred in the account of it to Leviet, one of the queen's female embroiderers. We have a strong impression ourselves, founded on internal evidence, that the borders, at any rate, are not the work of women. Two specimens of fifteenth-century work, one from Berne and the other from Beauvais, are given with much brilliancy of colour, and an indentation of paper that produces an excellent representation of needlework. We quote a short passage from the historian of the monastery of St. Florent, at Saumur, which shows that tapestry, in the tenth century, was looked upon in the same light as painting and sculpture as a means of the internal decoration of churches:—"In the time of the abbot Robert III. the vestry of the cloister was further enriched by magnificent paintings and pieces of sculpture, accompanied by legends in verse. The above-mentioned abbot, who was passionately devoted to similar works, sought for and purchased a considerable quantity of magnificent ornaments, embroidered with various devices. Among other objects he caused to be made two pieces of tapestry, of large size and admirable quality, representing elephants; and these two pieces were joined together with a rare kind of silk by hired workers in tapestry. He also ordered two dorserets in wool to be manufactured." English embroiderers, we must add, occupied a high place in those days, and great store was set by *opus Anglicanum*.

We pass over the chapters on ceramic art, armour, and saddlery,—not because they are less attractively written than those we are about to speak of more especially, but merely on account of the impossibility of noticing all. Those interested in the subjects we omit will be charmed with the care taken in the treatment of them, and with the profusion of examples with which they are illustrated. We turn to the account of works in silver and gold, because at the present day these are occupying a conspicuous rank in English endeavours to keep pace, if not to keep a-head, of European progress. The modern goldsmith is, or should be, an artist. Hear what his predecessor was in Mediæval times. The monk Theophilus, whose Latin treatise on the industrial arts of the twelfth century shows us so many pictures of art-workmen in the days of old, tells us that a goldsmith was a modeller, sculptor, smelter, enameller, jewel-mounter, and inlay-worker, or an expert in arts now divided into six distinct occupations. "He had to cast his own models in wax, as well as to labour with his hammer, or embellish with his own graver; he had to make the chalice, the vases, and the pyx, for the metropolitan churches, on which were lavished all the resources of art; and to produce, by the ordinary process of punching, the open-work, or the designs of copper, intended to ornament the books of the poor." The goldsmiths of yore had both the patronage and the opposition of the church. Whilst one set of ecclesiastics spent all their oratory in tirades against luxury and riches of every description, another beautified the services with the greatest wealth they could accumulate. Though St. Boniface said bitterly and reproachfully, "Once golden priests used wooden chalices, now, on the contrary, wooden priests use golden chalices," there were abbots, who, like Abbot Suger, of St. Denis, patronised the craftsmen who produced the golden chalices, and protected the more ornamental of the industrial arts till they were past all danger of being extinguished by disregard. St. Eloi, the bishop and goldsmith, who was prime-minister to Dagobert I., whilst he worked incessantly for him, "assisted by his servant Thillon," at the production of gold vases, enriched with precious stones, laid the foundation for the esteem in which the art was held in subsequent centuries. He decreed that goldsmiths should be of two orders,—religious and secular; so that objects destined for the church should not be made by the same hands that formed those intended only for worldly purposes. The greatest integrity was called for, and generally speaking practised by the craft; for the material in which they wrought was required to be of a legal and authenticated value; and all attempts

* "The Arts in the Middle Ages, and at the Period of the Renaissance." By Paul Lacroix. Illustrated with nineteen chromolithographic prints by F. Kellerhoven, and upwards of four hundred engravings on wood. London: Chapman & Hall. 1870.

to depreciate it by unqualified practitioners were jealously exposed and punished. By virtue of the honourable position they enjoyed, they occupied the first place in the processions of the trades; and in the wealthy Flemish cities even dictated the laws of the corporations. In Paris they clustered round the residence of St. Eloi, turning it into a *quartier*. They were exempt from the watch and all other feudal services; and had the custody of all the gold and silver plate used by the city when its magnates entertained illustrious guests, besides the privilege of carrying the canopy over the king's heads on their accessions, and of walking, crowned with roses, as the shrine-bearers of St. Geneviève, when her relics were used for miraculous purposes. Fine gold crosses, studded with gems of seventh-century workmanship, are illustrated. The votive crown of Suintila, king of the Visigoths from 621 to 631; the sword and diadem of Charlemagne, preserved in the Imperial treasury at Vienna; a Byzantine reliquary brought from Mount Athos; the altar of gold presented to the cathedral of Basle by the Emperor Henry II.; and an enamelled shrine in Limoges work, are further early specimens of the art shown. Specimens of the skill of St. Eloi, Benvenuto Cellini, and Pierre Raymond are also given. The author of this interesting section makes the remark that Claude Ballin, the inventor of silver furniture, was the last goldsmith; and Pierre de Montarsy, who gave special attention to the cutting and mounting of precious stones, was the first jeweller.

Sundials, water-clocks, hour-glasses, and then water-clocks with the addition of clogged wheels, are so many steps that bring us out of the old uncounted time to the court of Charlemagne, at which a present of a clock from a no less personage than Aroun-al-Raschid made a great sensation, for it was almost as wonderful as an Arabian night's tale. Eginhard says it was brass, "damaskeened with gold, and marked the hours on a dial. At the end of each hour an equal number of small iron balls fell on a bell, and made it sound as many times as the hour indicated by the needle. Twelve windows immediately opened, out of which were seen to proceed the same number of horsemen armed cap-à-pie, who, after performing divers evolutions, withdrew into the interior of the mechanism, and then the windows closed." The earliest mention of a striking clock occurs in the "Usages de l'Ordre de Citeaux" of the twelfth century, in which the sacristan is instructed to regulate the clock in such a manner that it may sound and awake him before matins; and in another passage the lecture is ordered to be prolonged till "the clock strikes;" and from this point we are carefully convoyed through notes of most of the curious clocks that ancient ingenuity manufactured, and descriptions of the successive improvements that, like the "Nuremburg eggs" of Peter Hele, have resulted in so much convenience for all of us. Scarcely less curious than the celebrated Strasbourg clock is that which Henry II. had constructed for the château of Anet. At the recurrence of each hour a stag darts out of the mechanism, followed by a pack of hounds, but suddenly the hunt comes to a stop, and the stag strikes the hour with one of its feet.

To these curiosities succeed musical instruments, with names that set us thinking of the Lament of Charlemagne and similar far-off and long-ago minstrelsy. We know the lyre, the harp, the lute, and the guitar; but how can we tell in their Mediæval guise the *cithern*, the *nable*, the *croute*, the *rote*, the *gigue*, the *viola*, and *monochord?* Yet these are the instruments in the hands of kings and angels in miniatures, sculptures, and frescoes; and not to know them is to be cut off from many pleasant associations of idea. And thus it is we see, as in scores of other instances, how necessary it is that an artist, though he may occupy himself only with one art, should have a knowledge of all; and, looking further, how exceedingly useful a work of the comprehensive character of that under notice is likely to be to almost any one who may take it up.

Then we come to playing-cards, elevated into objects of great interest through their connexions, engraving and printing. Our author thinks it settled now, by deductions made from investigations carried out by antiquarian scholars (though we do not), that playing-cards existed in India in the twelfth century; that the ancients played at games in which figures and numbers were represented on dice or tablets; and that the games of cards and chess of modern times possess striking affinities which prove their common origin, the one being associated with painting, the other with sculpture. The playing-cards of India were in fact but a transposition of the game of chess, the details differing, but the idea of war, carried on by stratagems and combinations, being dominant. St. Bernard inveighed against cards as he did against luxuries of every description. A card-maker came to him one day, after he had stirred up a great concourse of hearers to a pitch of zeal that induced them to bring their dice, chess, and cards, and burn them before his eyes, and, crying bitterly, told the austere regenerator that by putting an end to his trade he would reduce him to starvation. "If painting is all you are capable of," replied the preacher, "paint this picture." And he placed in his hand a radiated sun with the monogram "I.H.S." in the centre, which the card-maker copied to his satisfaction. The legend adds that this sign made his fortune, for St. Bernard adopted it as his device, and an immense number of copies of it were required. The transitions by which the present conventional figures on playing-cards have got their footing are gradual as well as curious; and are agreeably illustrated. There is disputable matter in this section, but we may not go into it.

In the account of glass-painting, we perceive M. Lacroix gives Albert Dürer credit for twenty windows in the church of the Old Temple, in Paris, most unreservedly. He says,—"The celebrated German did not work alone, other artists assisted him; and notwithstanding the devastations which took place during the Revolution, in many a church and mansion, traces of these skilful masters may still be found; their compositions, which are generally as well arranged as they are executed, are marked with a tinge of German simplicity very suitable to the pious nature of the subjects they represent." The chromolithograph of this section is a portion of a window in the church of St. Gudule, Brussels, representing Francis I. and Eleanor at their devotions: very telling, touching, and resplendent.

As a *chef-d'œuvre* of fresco painting, we are treated to a reproduction of the fresh bright greens and soft blues of "The Dream of Life," from the Campo Santa of Pisa, that sunny picture of earthly happiness represented by youth, gaiety, rich vestments, love-songs, musical instruments, falcons, dogs, and such accessories, which death is always threatening with a sweep of his wing. There are eight other frescoes illustrated in woodcuts selected with judgment. Paintings on canvas and wood are treated of; and the various schools shown in eleven woodcuts. The painting attributed to Margaret Van Eyck, representing St. Catherine and St. Agnes, against a background lighted up with a sunset, is glowingly chromolithographed. In speaking of engraving the author combats the impression that engraving on metal was derived from engraving on wood. No one, he says, who has any professional knowledge of the subject could believe this to be the case, because the processes are quite distinct, and must have been the result of two independent inventions. Whether the art was of Chinese or Egyptian invention he does not decide, but takes it up at its appearance in Western Europe in the first half of the fifteenth century. Among other illustrations of this subject is one of the scarce pieces by Bernard Milnet. Only six specimens of this engraver's peculiar manner are known. He used neither lines nor cross hatching; but on a black ground made a powdering of white dots, varying in size according to the degree of light required. He is generally called the "Master with the dotted backgrounds." M. Lacroix throws a fiery brand into the circle of collectors by declaring that it is only by an error that Albert Dürer, Lucas van Leyden, and Lucas van Cranach, are counted engravers. There are engravings with their names attached, because they drew their drawings on the wood and signed them, and the engraver merely engraved these signatures as they did the rest of the pencilling. We must recommend him to the mercies of Received Opinion in this matter.

But if we have found it difficult not to linger by the way as we have looked down the vistas that each section of the arts places before our eyes, we find it still more so when we come to the history of Mediæval sculpture. From the day that Constantine was baptised by Sylvester in the porphyry font, with its watercourse and surrounding figures of silver, sculpture never rested. And here we may read of its vigour, originality, powers of acceptation and expression on all subsequent centuries. Take the tomb of Dagobert, executed by order of St. Louis, in the Abbey Church of St. Denis.* Could aught in music or poetry exceed its delicacy and fancy? On the tomb lies the dead king, crowned and robed, his eyes closed, his hands folded in instant prayer. At his head and at his feet stand two crowned and gracefully-draped figures, on eternal guard. Filling the wall space of the arched superstructure, is a panel with three tiers of sculpture representing the king, dead and nude, carried away by demons in an infernal bark on an infernal sea, and his rescue by angels and the fathers of the Church. Is not this a portraiture of Christian hope and fear deftly modelled by Imagination? Benign and beautiful, too, is a representation of St. Eloi, as patron of goldsmiths and farriers, in the Church of Notre Dame d'Armançon, at Semur, Burgundy, another illustration. And while all deserves praise, more praiseworthy still is Jean Cousin's alabaster statue of Philip Chabot, Admiral of France, with his war-gear by his side, on his coach. It is another advantage of a work of an international character like that before us, that specimens of art are brought from out-of-the-way places before us, which, otherwise, many would probably never see.

The same reflection occurs to us as we turn over the pages devoted to architecture. Many traverse France from Calais to Marseilles a score of times, and never go off their route, to visit the generous, mellow, storied, sculptured church of Notre Dame la Grande of Poictiers. But here they may scrutinise it; its carved arches, with their low soft curves; its tiers of niches, with a figure in each; its short scaled and cone-shaped roofs. We may contrast its marvellous crumbling richness with the plainness, or bareness, of the Rhenish Norman style of Mayence Cathedral, where the turrets are tall and attenuated; the doorways taciturn and barren; the windows blanks; but where additional height and size tell of power and grasp.† And in the fac-simile of a miniature drawn with the pen, taken from a Bible of the eleventh century, in the Imperial Library, Paris, we may see the Norman masons at work upon them, all bareheaded, in short tunics, lifting the stones, ascertaining the level of a course, and using both mallet and trowel. Thus, not only may we transport ourselves into remote places, but into remote times, by the simple process of turning over a page. Twelfth and thirteenth century architecture is illustrated by Notre Dame, Paris, and Amiens Cathedral: that of the fourteenth century not so happily by the "saloon of the the schools, Oxford." In the ancient castle of Marcoussis, near Rambouillet, we are shown one of those square edifices with circular towers with peaked caps at the angles, rising out of a deep moat that the tapestry-workers loved to depicture. For further illustrations of French castellated architecture, there are the Castle of Coucy in its ancient state from a thirteenth-century miniature; the Castle of Vincennes, in the seventeenth century; the Tour de Nesle, that formerly occupied the site of the Exchange in Paris, and the fortified gates of Moret and Provins. There are two buildings that must always appear in all works of architecture, and they are here,—St. Peter's, Rome, and the Alhambra, Granada. The thoroughly French buildings, châteaux, are represented by that of Chambord, with its ancient moat, a truly kingly pile. It is refreshing to read, in these days of contracts and cheap schemes, of such a decree as the following, issued by the magistrates of Florence, in 1294:—"Forasmuch as it is in the highest degree prudent for a people of illustrious origin to proceed in their affairs in such manner that their public works may cause their grandeur and wisdom to be acknowledged, the order is given to Arnolfo, master-architect of our town, to make plans for repairing the Church of Santa Maria, with the greatest and most lavish magnificence, so that the skill and prudence of men may never invent, nor ever be able to undertake, anything more important or more beautiful." Alas! for the shortness of human life. Though the master-architect designed such an unsurpassable restoration, it was not given to him to be able to carry it out; nor to his successor, Giotto; nor to his successor, Orcagna; not until a fourth master, Brunellesch[illegible], had taken the task in hand was it accomplished. Alas!

"The work of the copyist" (we are quoting Alcuin, by way of introduction to a word or two about manuscripts) "is a meritorious work which is profitable to the soul; while the work of the ploughman is profitable only to the belly."

* See p. 249.] † See p. 246.

And the monks copied and copied with Christian zeal. Those who could not write occupying themselves with binding. Only middle-aged men, trustworthy and careful, were approved as copyists of the Gospels, Psalter, and Missal, for fear of verbal errors; and the greatest of the great considered copying a privilege. Charlemagne copied Origen's work, and introduced as he wrote, his genius cropping out even in this particular, those useful signs, the comma and full-stop. Religious sentiment and writing were so blended that a saying took wing, "To write like an angel." The different characters used, shown in fac-similes from pale and precious manuscripts, cover eight pages. We must pass on to the miniatures with which some of them are adorned. As we have said, those previous to the eighth century are exceedingly rare. One is shown from the Virgil in the library of the Vatican, of the third or fourth century; another Virgil, presented to the pope, constitutes probably the only other specimen of this early date. The capital letters only were embellished by caligraphy in the sixth and seventh centuries. In the eighth and ninth centuries these were painted, and formed of combinations of birds, fishes, beasts, and foliage. A book of the Gospels, said to have belonged to Charlemagne, now in the library of the Louvre, furnishes the first attractive miniature; and the Commentaries of Gregory Nazianus the second, wherein is represented the consecration of a bishop. As well as good examples, the writer has shown one base one. Nothing could be devised more absurd and laughter-moving than a barbarous miniature of the beginning of the eleventh century, representing the solemn scene of the crucifixion, which is removed, as he declares, even from the instinct of drawing. On the other hand, few art-objects could be more minutely clever and dainty than a later miniature, taken from Froissart's chronicles, rendering the coronation of Charles V., of France. Borders from French and Italian MSS. furnish many curious combinations; but, perhaps, the greatest curiosity shown us in this collection is a miniature, painted by Giulio Clovio, taken from Dante's "Paradise," representing the poet and Beatrice transported to the moon, the abode of women devoted to chastity. There is the moon, full, pale, and placid; and across its large and gentle features walk Dante and Beatrice to meet a group of sweet-faced women waiting to welcome them on one of its round soft cheeks. The "Hours" of Anne de Bretagne furnish a beautiful Annunciation, in which a white-winged and white-robed angel appears to Mary, also white-robed, in a gallery of grey and chocolate set off with scarlet.

In 1299, there were, in all Paris, but seventeen bookbinders by trade. The reason of this small number was that copyists bound their own books, or had them bound in their own monasteries. Tritheimius said of his monks:—"Let that one fasten the leaves together, and bind the book with boards. You, prepare those boards; you, dress the leather; you, the metal plates which are to adorn the binding." Thus it came to pass that there was but little occupation for bookbinders beyond the walls of the convent, till after the invention of the printing-press. The inventories of the libraries of the dukes of Burgundy and the kings of France tell of volumes bound in leather, velvet, silk, and camlet. And though we have come to the extent of our limits, we must note a small book, as a sample of many others, with a binding ornamented with gold and fifty-eight large pearls, which was kept by its ducal owners, of the House of Burgundy, in a camlet case embellished with one large pearl and a cluster of small ones. In those days, too, some books were furnished with "a little silver-gilt instrument for turning over the leaves." They were weighty leaves, we must remember. One of Petrarch's books, of his own copying, was so ponderously bound that it frequently fell out of his hand on to his leg; which it injured so seriously that it was feared he would have to have it amputated. Another poet has asked,—

"For how shall he know what comes after, who knoweth not what went before?"

With his question we close our recommendation of this volume, so pleasantly filled with word of what has been before; and therefore with suggestions of what may be done hereafter.

Art-Union of London.—It will be seen from our advertising columns that the subscription-list of the Art-Union closes on Thursday next.

GLASGOW, SANITARY AND SOCIAL: A GLANCE.*

RESUMING our observations, we would particularly direct the attention of the civic authorities of Glasgow to another noted but neglected quarter of the town. Drygate is well known by name. The Necropolis overlooks it, and there is a cold, damp sweat upon its tiles and pavements. Verily this quarter is on its way to the sepulchre, and a funereal moan is in the voice of its inhabitants. The Drygate is rather a damp gate, and were it not for its long undulating base, which accelerates its drainage, Drygate would be a wet place indeed. A bad road and footpaths are here; houses are propped, and the property does not seem to be very valuable. Yet there are good houses about, but they are in bad company. A lodging-letting colony are squatted down here, and their cipher certificates of authority are nailed like "Notices to Quit" on their door. These numerals tell of the number of cubic feet of air within, but they are silent about its density. As they comply with the local Act as to space, they stand upon their right to drive a coach-and-six through other clauses. But hold. They are poor, and they are struggling hard for a living. Why does not the Corporation help them to ply their calling with decency, by keeping their neighbourhood clean?

We wind round by Lady's Well, and its houses are on a par with the last-named. Here, in an angle, niched into the churchyard-wall, a fountain, in shape like a sepulchral urn, is seen. The fount of inspiration, however, is dry here. Nothing wells forth, as far as we can see. An inscription above tells us, in pretentious wording, that "The Lady's Well" was erected, in pursuance of the request of the citizens of Glasgow, in 1833. How long its waters contributed to their health we do not know; but this we do know, that the angle of a churchyard wall, above which rise several feet of dripping clay, and over which peep sundry and several tombstones, was not a very meet spot for a public fountain. The old rivulet that sweeps between the High Kirk and the Necropolis dashes its muddy waters onward here, utilised by millers and others, and catching in its course many slimy and sluggish sewers, is reeking with filth. No improvement is discernible here; not a bit. The sides of this streamlet, which could be embanked, are jagged, broken, and loathsome to the sight. It could be made a pleasure to look upon; but far better that this running sink should be now covered over. It disappears under the Gallowgate, and finally empties itself in the Clyde.

Not far off from the quarters we have been describing we examined some houses in course of construction. They are on a par with the improved dwellings we have already described in the beginning of this article.

Some of the "flats" are apportioned into six rooms; a room and kitchen for each separate family, with a water-closet for the use of every three families. Some of the flats here have a *one*-room accommodation for families, with the usual partitioned niche in the corner for the bed.

The character of the carpentry or joiners' work of these four or five story flats needs no description. It might have been executed by an amateur casual. The mason and the plasterer do the principal work, and when the sashes are hung, the doors hinged, and the painter has put on the priming, the flats are ready for their victims. Ere their final finishing, their first tenant often pays nature's debt and the poor-rate together.

What we would advocate for the working and middling classes of Glasgow is a number of self-contained houses—houses built to accommodate one or two families at most. There should at least be three rooms for each family, two rooms and a kitchen, with washhouse, privy, ashpit, and so on. These could be cheaply built in or about Glasgow, and the material might be either brick or concrete.

For building with the latter material Glasgow affords rare facilities because of the number of its foundries and iron works, which have any amount of waste in the form of calcined cinder or shingle. It is as hard as granite, and admirably adapted for the purpose of concrete dwellings. We throw out the hint, and would be glad to see the waste of smelting-houses and furnaces utilised for some good end.

Improved dwellings for the poor are a necessity, and they will have to be erected if Glasgow wishes to escape a serious epidemic some day or other.

No excuse at all can exist for not having a thorough system of drainage in operation in Glasgow. No engineering difficulty exists to prevent the accomplishment of that and the continuance of a perfect and unfailing water supply. The city railways are pushing forward, and it will not be very long before they are connected at both sides of the river, with all the existing lines. A central station will be in Dunlop-street, on the site of the old Theatre Royal; and the old Glasgow University, in the High-street, will be another terminus.

The new bridge at the Jail-square, leading from the Saltmarket to the south side, has not progressed much as yet. The abutment pier, on the north side, is in course of erection. The removal of the old bridge occupied considerable time. A temporary one of timber supplies the place of the demolished bridge. A little lower down the river, the Union Railway crosses the Clyde. It is an iron lattice bridge, supported on six pairs of columns, the lower half being iron, the upper half granite. There is little beauty about the design, but it is constructed sufficiently strong to serve its useful purpose.

"Paddy's Market," a series of clothes-stalls that formerly existed off the Saltmarket and opposite to the Jail-square, is now upon the square, or, rather, should we say, it is on a portion of Glasgow-green. A wooden enclosure, within which are sheds with a number of central and side stalls, now constitutes the famous "Paddy's Market." Here may be seen for exhibition and sale the cast-off garments of the British and Continental public. The man who, short of cash and circumscribed in income, could not pick up a second-hand suit here, "quite as good as new," must be hard to please. Here are pants, knickerbockers, knee breeches, moleskins, corduroys, tweeds, black cloth, blue and iron grey; inexpressibles of every shape, size, and twill; and, as for coats, there are whitneys, kerseymere, Irish frieze, Meltons, alpacas, Highland plaid, shooting, fishing, walking, riding, eating, and drinking coats,—and last, though not least, some of the identical swallow-tail pattern, with brass buttons, which the immortal Paddy himself is said to have worn on the memorable occasion "when he took it off" and dragged it through Donnybrook fair, daring the dastardly Sassenach to tread on the tail of it. Paddy's Market in Glasgow is a study. Petticoat-lane in London is noways like it. It stands alone, unequalled and unexampled, as a rendezvous for the pawned, pilfered, and cast-off rags of the world.

We are almost tempted to say that, after a careful consideration of the sights and scenes we witnessed in many parts of Glasgow, it out-Herods all other cities and towns in Great Britain for the terrible sin of chronic and sottish drunkenness. Liverpool is the only English town which can bear any approach, comparatively speaking, with Glasgow. You can scarcely pass at night through the High-street or the Saltmarket, or even Argyll-street or the Cross, without being stumbled against by a drunken man or a raving woman, whom drink has transformed into a maniac. It would be difficult to decide, of the two classes of the labouring population of Glasgow, which, whether the low Scottish element or the low Irish element, is the worst. The former drinks more to himself,—muddles more; the latter is gregarious, and he likes a little excitement, call it noise or fun if you will.

To the most common observer a look into the faces of the working population in the low quarters of Glasgow will exhibit the effects of the evil we are describing. Pallid, pinched, and cadaverous looks, bent forms, sunken eyes, a trembling gait, an absence of all manly spirit and animation,—this is a true picture of what may be read in the faces of many of the working folk and others in the low quarters of Glasgow. It is nowise overdrawn; it is a real, not an ideal, picture; and we would wish, for various reasons, we could honestly say otherwise.

We will adduce an instance in corroboration of what we write about the drunkenness of Glasgow. We have it from a police official. From one court alone in *Glasgow*, within a week, there were upwards of 17*l.* paid in fines in police-court cases; and perhaps we overstate the fact if we say that in this particular court there are twenty families. Think of what 17*l.* might have done for the well-being of these wretched families, husbands, and wives, and children. Is it not a fact known to all men of the world that bad and wretched homes are often the cause of driving men into the public-

* See p. 218, *ante*.

house for the sake of company, and temporary heat and comfort? Few like to sit down in narrow, darksome rooms, amid squalling infants and often squalid misery, while the price of the pot of ale or glass of whiskey can be squeezed out of the weekly hoard. There are some of our working men who will satisfy the craving for drink, though they should run the risk of feeling the pinch of hunger.

Improve their dwellings, say we; build them homes fit to live in, give them proper breathing spaces, and a plentiful supply of pure water and pure air, and we venture to say the number of drunkards will be less.

Confining our remarks to Glasgow, and looking upon its present state, one is almost tempted to say that the institution of a number of hospitals for the reclamation and cure of drunkards would be a very laudable undertaking. With all her temperance societies, temperance hotels, and temperance lecturers, Glasgow, as we have already said in other words, is the most intemperate city under the English crown.

A few words now about what more intimately concerns our constituency. Glasgow is growing rapidly within as well as without. House-building is going on; the University is being erected; and public works as well as private are being projected. Capital and labour are again in contact, and as the demand increases for the former, the workman is seizing his opportunity, and turning to his advantage for the moment. The employer has his hands full, and so much work has to be executed in Glasgow this year, that something must be sacrificed on the score of expediency. The ship-building business on the Clyde is pretty brisk, and there is always something to be done in this line on the river.

In our rapid survey of Glasgow, sanitary and social, we have endeavoured to note faithfully what we saw and observed, as well as what we had already known by experience. In corroboration of our remarks, the criminal statistics of Glasgow will tell a social tale in sad and unerring figures. By these social data Glasgow's sanitary state is illustrated; and we but bring our few sparks of light to make the picture stronger, and to hasten, if it may be, the efforts that should be attempted to reverse it. "Let Glasgow flourish." But that she may do so, Glasgow must be cleansed.

Glasgow at this moment is bearing the criminal burden of about 700 professional thieves, in addition to those of her own indigenous population, who ply that trade whenever and wherever they can. This datum we have from an official of the detective department. The law that is in force in England, which gives power to arrest *suspects* who are known to profess the thieves' calling, and to question them as to their modes of life and labour, does not apply to Scotland at present. The consequence is, that an exodus of the thieving fraternity has taken place from the sister kingdom, and thieves ply their trade here with impunity so long as they are undetected, though known to the police as swell-mobsmen and evildoers. Add to these facts the number of 30,000 who get drunk, or go to bed drunk, every Saturday night in Glasgow, and we have an appalling statement of the social and sanitary condition of the great commercial city on the banks of the Clyde. The death-rate of the city has swelled to such enormous proportions that a panic is beginning to seize on the mind of the sober-minded citizens, and has spurred them at last to the necessity of public meetings to draw attention to, and to take steps to remedy, this terrible evil.

PROFESSOR SCOTT ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE III.*

MY last lecture brought the subject of vaulting to its full *functional* development,—that which contains all elements whose origin can be traced to the demands of utility, but none which have been introduced purely for decorative purposes. In my present lecture I must supplement what I then treated of with some cases of its application which I had not then time to detail, and then proceed to carry on my subject into its more distinctly decorative developments.

Before, however, I proceed further, it may be advantageous—though construction does not, perhaps, come within the range of lectures in this Academy, excepting so far as it exercises an influence upon form—to say a few words on certain practical points which are necessary to the full understanding, even of the artistic portion of the subject we are considering.

In the earlier forms of vaulting, the entire strength lay in the continuous arched surface, which was constructed of brick or of stone, or of rubble bonded at intervals with brick or stone; the rubble or stone being often of the cellular material called tufa, which was much used by the early builders on account of its lightness as well as the tenacity with which it united itself to the cement.

Transverse ribs were next introduced at intervals to strengthen the wider spaces; and, at a later period, the angles were similarly fortified.

These ribs, in early examples, sprang distinctly as separate arches from the impost, the vaulting passing over them. At a later period—even in round-arched vaulting—we find the practice coming into vogue of uniting the ribs, and even the springers of the vaulting itself by cutting them at the base out of the same blocks of stone. We see an early specimen of this in St. Bartholomew's Church.

When the ribs became more numerous it often occurred that five or even eight of them had to spring from one group of capitals; and at times three at least (and subsequently more) from a *single* capital. It is clear that in such cases the three or more distinct forms could scarcely retain their separate existence, but that they must be united in their lower portions in a single block, and that their forms would, more or less, die one into another. Though we can trace this process in Norman work, it was not completely established till some time later.

It will be better understood by means of a figure, in which a transverse rib, two diagonal ribs, and two wall ribs meet at their common springing line, and so intersect and unite one with another as to produce a section at the base composed of portions of them all. Now, a drawing of this group of ribs will at once show that their combined and united form must extend to some considerable height above the springing; and so far as it reaches, which is often some 8 ft. or 10 ft. in height, they cannot possess an individual existence. To this height, then, it is customary to build the group of ribs in horizontal courses, and only to commence the radiating arch-joints where the ribs clear themselves one from another, which usually occurs at one level, though in vaults of great irregularity one rib often clears itself at a lower level than another.

In setting out the relative position of the ribs upon the common springing level, great skill and judgment are requisite, or they will clear themselves one of another so irregularly as to cause great difficulty and needless twisting in the filling in of the vaulting surface. If you set out on plan the side lines of two ribs, and lay down the true position of the mouldings of *one* of them, it is clear that, if the curvature of both were equal, the second rib should be set out with its back line at an equal distance from the points at which the plans of the adjoining lines would intersect; for, in following the curve, both would at a given height reach a point vertically over that intersection, and so the filling in would have a proper starting-point, which would not be the case if they reached that vertical line at different heights. As, however, the diagonal rib (where the ridges are level) has to travel farther to reach a given height, its springing section has to be set *further back* to make it reach the vertical line over this point of intersection at an equal level with the transverse rib. The wall rib in a square vault would be similarly placed with the transverse rib; but in an oblong vault, as it would travel a *less* distance to reach a given level, its springing section must be placed *forwarder* than that of the transverse rib, and, of course, *greatly* forwarder than the diagonal. This is easily adjusted by drawing the curve of the back of the rib, whose position is first determined, drawing against it the vertical line of its intersection with the next rib, and then, from the apex point of the adjoining rib, to draw its curve through the point of intersection, which will give on the springing line the distance *backward or forward* at which the springing section of that rib should be placed.

The ribs of all vaulting of early date are square and flat at the back; the vaulting, which is often very thick, passing over and resting upon their backs. In later works the ribs were usually deeper from intrados to extrados, and were notched, or as it is technically called, "rebated," to receive the vaulting, or at least the lower part of its thickness; for where the surface was not intended to be plastered, the wrought stonework was often a thin casing covered over above by a thicker mass of rough work. The curvature of the courses of wrought stone enabled them to be set without the use of continuous timber centering, and this inner facing, once finished, would itself form a substantial centering for the outer rough vault.

At a later period this outer thickness was dispensed with as a superfluous load. In all cases the hollow space against the wall behind was filled in solid to a certain height to strengthen the haunches of the vault.

The ribs now became beautifully moulded, and sometimes decorated with carving. In early works, as at St. Cross, St. Peter's, Oxford, St. Joseph's Chapel at Glastonbury, and in the aisles at Canterbury, the old Norman chevron was continued in the ribs. The meetings and intersections of the ribs at their apex were usually ornamented with bosses, and beautifully carved. These bosses assumed many varieties of form—sometimes a small rosette, or a little tuft of foliage, merely to decorate the centre of the intersection without covering the mouldings; sometimes the mouldings themselves return round a central opening, with or without foliage; sometimes a head of part of a figure was added to the last-named form in each angle, nearly at the plane of vaulting; sometimes beneath such moulded boss a disk was attached with or without foliage, as if to form a cover to the central opening; indeed, it was occasionally actually the moveable cover of such an opening. In England the usual form is a group of foliage covering the intersection, and frequently containing figure sculpture. Westminster Abbey furnishes admirable exampleaboth of the foliated and sculptured bosses of which I exhibit some casts.

As regards the intermediate surfaces of the vaulting, a curious difference is found to obtain between the methods adopted in France and in England.

In France the courses of stone run parallel to the ridges, as would naturally suggest itself from the original intersecting vaults; while in England they take an irregular direction, as if suggested by placing them at right angles to an imaginary centre line of each triangular space, though really deviating much and irregularly from such a rule.

The French seem much offended by the appearance of the English system; and I remember feeling in the same way when I first saw the French method. The latter seems to throw undue pressure on the diagonal ribs, while the English mode appears to throw it more equally on *all* the ribs; throwing it, in fact, down into the direction of their meeting point.

I will now describe a form of vaulting which, though it originated during the round-arched period, seems more properly to belong to that now under consideration. We have seen that the arches of churches were frequently arranged in pairs; the piers alternating in size and design. Supposing each arch to be about half the width of the nave, each *pair* of arches would form a square on the plan; and, though such a square space may be, and often was, divided into two oblongs in the vaulting, it is equally natural to vault it as a single square. As, however, this leaves the alternate piers unrepresented in the vaulting, it became frequent to carry across from this intermediate pier a single transverse rib crossing the diagonals at their point of intersection, and between it and those diagonals to introduce oblique vaulting cells, whose ridges strike from the centres of the half-bays to the point of intersection.

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The same principle was applied, in a varied form, at the east end of the Priory Church at Tynemouth, where, though the bays have ordinary vaulting, the eastern wall is divided into three parts, corresponding with the windows, over which cells of vaulting are formed, converging to the intersecting point of the compartment.

Curiously enough, we find the same arrangement repeated a century and a quarter later in the crypt of St. Stephen's Chapel, in the Palace of Westminster.

In the Lady Chapel at Auxerre the same idea is carried out still further, the vaulting, square in plan, having two of its sides divided into two cells each, as on the sexpartite principle, and the other two into *three* each, as those above referred to, making in all a *deca*partite vault. If *all* sides had the threefold division, it would have become *dodeca*partite, or a vault of twelve cells.

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I will describe the last-named vault by a comparison between those of two corresponding chapels near the west end of Lincoln Cathedral, to the right and left of the nave.

The two chapels are alike in plan,—an oblong, each side of which is divided into two arches. They only differ in that one has a central pillar and the other has none. The one is simply divided into four groined vaults on the most customary principle. The other is similarly vaulted up to the line of the square, the angles of which would be represented by the four bosses of the first-named vaults; but from thence the diagonal ribs, instead of returning downwards on to a central pillar, continue to rise till they meet in the middle point of the chapel. This upper portion, therefore, is the top of a square dome; and the whole vault may be described as a square dome penetrated on each side by two Welsh groined cross-vaults. This combination is common in the vaulting under central towers, as at Lincoln and York; though in these cases the central portion is bounded by a strongly-marked horizontal line defining the boundary of the half-groins below, and the square dome above. In the chapel I have been describing there is no such boundary line, but the groining compartments continue till they meet in a point at the top. This system may be carried out with any number of bays; and we have in the chapter-house at York an instance of its application to an octagon. The plan of the vaulting there is identical with that of Westminster or Salisbury, but the portion inclosed within the inner octagon, instead of turning down to the central pillar, runs up to the point at which all the arched lines would meet in the centre.

The relation between the vaulting of the chapter-houses of York and Westminster is, in fact, the same as that between the two chapels at Lincoln just described. In each case we see how similar forms may be covered over with vaulting nearly identical in plan—with or without a central pillar at pleasure.

There is a parallel case in the crypt of Glasgow Cathedral, in which the compartment is divided on three of its sides into *two*, and on the other into *three* arches.

This crypt is a work in which the architect would appear to have revelled in self-sought perplexities, and to have solved them, one after another, with singular success.

The portion of the crypt which represents the choir overhead is really one of the most lively and amusing pieces of vaulting I know. It consists of *ten* bays; and, as the east end is necessarily divided into *two* bays for the support of those above, nothing would have been more natural than to have placed an intermediate row of columns down the centre, dividing the whole into two ordinary ranges of d,-lting. But no, the architect would have lodary wah by any such common-place scheme, rand generuld have lost a very pretty and instruc of the rc.

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Adjoining one of these beautiful squares comes the compartment first alluded to. It is a very parallel case to that last described. On three sides it is the same as the Lincoln chapel, with a portion of a square dome instead of a central column (excepting only that this has the boundary line), while the fourth side, having *three* divisions instead of two, is dealt with precisely as has been described in the preceding case. Amongst these intricate compartments are alternated single bays, each divided transversely into three squares of ordinary groining; and the perplexity of the effect of the crypt arises not so much from the difficulty of any of the forms of vaulting, as from the constant change from one form to another, no two adjoining divisions being alike. The whole is carried out with excellent detail, and forms a most beautiful and interesting interior.

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A curious effect is produced by carrying vaulting out accurately in a circular aisle or corridor, where it gives the diagonal ribs a twisted line, bending them out of the vertical plane. This is well seen in the apsidal aisle in the Cathedral at Bourges, both in the church itself and the crypt.

I will only notice two or three more varieties of this stage of vaulting, and those of a miscellaneous character.

The chapter-house at Lichfield is an elongated octagon, one of its sides on either hand being double the length of the others, and divided into two bays. The vaulting is a curious elongation of that of the regular octagonal chapter-house: a cell on either hand being interpolated, and the ribs all converging obliquely to the central pillar.

At Caudebec, in Normandy, we have, though of much later date, a hexagon vaulted much as our own chapter-houses, but with a pendant substituted for the central pillar, and ingeniously suspended by a long stone from a constructional vault above.

At Durham, in the octagonal kitchen of the monastery, we have a curious piece of vaulting planned with a view to a central ventilating lantern. The ribs run from every corner at right angles to the side of the octagon, and consequently meet the third angle from that from which they set out, and their intersections leave an octagonal opening equal in diameter to one side of the original octagon in the centre, and this is strong enough to support the required lantern or louvre.

The vaulting of the Lady Chapel at Salisbury is remarkable for the extraordinary slenderness of the columns which support it, being thin Purbeck marble shafts of great height, reducing the width of the chapel by cutting off a very narrow range of vaulting from either side. Somewhat similar in cell is the vaulting of the crypt beneath the Sainte C. Chapelle at Paris, where, to avoid the segmental vaulting which would be the natural result of its limited height, the span is reduced by a range on either side of small pillars;—in this case so near the wall as to necessitate a great amount of stilting, and the introduction of a kind of tracery beneath the transverse ribs to give abutment to the central vault.

I should, in passing, mention that segmental vaulting is very frequent at this period, where the height is limited; and that, even where the main arches are not so, the diagonal ribs frequently assumed that form; indeed, it became necessary wherever the length of a diagonal exceeded double the height of its arch.

Taking this stage of the history of vaulting as a whole, we have peculiarly favourable opportunities of studying it here in London: possessing, as we do, excellent examples of all its most leading varieties.

In the Temple Church we have the curious circular aisle already described, being a specimen of the earliest era of true pointed-arched vaulting; while in the eastern portion, dating some forty or fifty years later, we have the most typical specimen conceivable of vaulting, all springing from a given level, and with level ridges. It is rendered the more marked in character by the division of the three ranges of vaulting by means of the pier-arches, which, coming close under the vaulting, assume the character of enlarged ribs.

Very similar to the last-named is the vaulting of the Lady Chapel of St. Saviour (or St. Mary Overie's), Southwark. The only striking difference being the number of spans and the absence of pier-arches, so that it assumes the form of a space divided into twelve equal and square compartments, and carried by six similar columns.

In the choir of the same church we have an excellent specimen of clearstory vaulting, with oblong compartments and stilted side-cells, worked in a manner somewhat different from the usual ploughshare system.

In the eastern half of Westminster Abbey, including the transepts, we have the vaulting of the oblong space (with ploughshare side cells), and of the square space, and of the four-sided space of all degrees of irregularity; we have apses of two dimensions, viz., the great apse of the Sanctuary and those of the radiating chapels, which are as beautiful specimens of the apse vault as can be found; we have, in the Chapter House, the vaulted octagon, with central pillar carried out in noble proportions and with excellent detail; while in the crypt below is a repetition of the same vaulting, of depressed proportions, and carried out with the severest simplicity.

We have in its inner vestibule two oblong vaults placed side by side, one apparently the square, and the other of the narrowest proportions; and in the outer vestibule beautiful miniature vaulting, on minute columns, and with the segmental arch; while in St. Faith's Chapel, hard by, we have an excellent example of the sexpartite vault. Parts of the aisles, too, are remarkable for the subdivision of their bays by transverse arches of the double orders of mouldings, giving a great nobleness and strength to their effect; and all these varieties are carried out with admirable detail and studied art.

It would lead me into too great length if I were to go into the moulding of the ribs; their combinations where grouping and intersecting one another in the springers, and the mode in which the shafts are arranged for their support. My illustrations will, however, do much to explain this. I must not, however, omit to mention that in French buildings, and frequently in the earlier English specimens, the plans of the abaci of these shafts assume both forms and positions indicating the general section and the directions of the ribs they carry, and that this is even shared by the *bases*; showing that the vaulting was the *very first* thing thought of and designed; and that, from the very floor of the building, it influenced the general design. This was lost in England by the introduction of the circular abacus.*

New Market Hall for Rugeley.—It has been resolved at a numerous meeting of tradesmen and other residents that a new market-hall should be erected. A committee, comprising the members of the Local Board, parish officers, and the chairman of the meeting, was appointed to promote and carry out the object of the meeting.

* To be continued.

house for the sake of company, and temporary heat and comfort? Few like to sit down in narrow, darksome rooms, amid squalling infants and often squalid misery, while the price of the pot of ale or glass of whiskey can be squeezed out of the weekly hoard. There are some of our working men who will satisfy the craving for drink, though they should run the risk of feeling the pinch of hunger.

Improve their dwellings, say we; build them homes fit to live in, give them proper breathing spaces, and a plentiful supply of pure water and pure air, and we venture to say the number of drunkards will be less.

Confining our remarks to Glasgow, and looking upon its present state, one is almost tempted to say that the institution of a number of hospitals for the reclamation and cure of drunkards would be a very laudable undertaking. With all her temperance societies, temperance hotels, and temperance lecturers, Glasgow, as we have already said in other words, is the most intemperate city under the English crown.

A few words now about what more intimately concerns our constituency. Glasgow is growing rapidly within as well as without. House-building is going on; the University is being erected; and public works as well as private are being projected. Capital and labour are again in contact, and as the demand increases for the former, the workman is seizing his opportunity, and turning to his advantage for the moment. The employer has his hands full, and so much work has to be executed in Glasgow this year, that something must be sacrificed on the score of expediency. The ship-building business on the Clyde is pretty brisk, and there is always something to be done in this line on the river.

In our rapid survey of Glasgow, sanitary and social, we have endeavoured to note faithfully what we saw and observed, as well as what we had already known by experience. In corroboration of our remarks, the criminal statistics of Glasgow will tell a social tale in sad and unerring figures. By these social data Glasgow's sanitary state is illustrated; and we but bring our few sparks of light to make the picture stronger, and to hasten, if it may be, the efforts that should be attempted to reverse it. "Let Glasgow flourish." But that she may do so, Glasgow must be cleansed.

Glasgow at this moment is bearing the criminal burden of about 700 professional thieves, in addition to those of her own indigenous population, who ply that trade whenever and wherever they can. This datum we have from an official of the detective department. The law that is in force in England, which gives power to arrest *suspects* who are known to profess the thieves' calling, and to question them as to their modes of life and labour, does not apply to Scotland at present. The consequence is, that an exodus of the thieving fraternity has taken place from the sister kingdom, and thieves ply their trade here with impunity so long as they are undetected, though known to the police as swell-mobsmen and evildoers. Add to these facts the number of 30,000 who get drunk, or go to bed drunk, every Saturday night in Glasgow, and we have an appalling statement of the social and sanitary condition of the great commercial city on the banks of the Clyde. The death-rate of the city has swelled to such enormous proportions that a panic is beginning to seize on the mind of the sober-minded citizens, and has spurred them at last to the necessity of public meetings to draw attention to, and to take steps to remedy, this terrible evil.

PROFESSOR SCOTT ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE III.*

MY last lecture brought the subject of vaulting to its full *functional* development,—that which contains all elements whose origin can be traced to the demands of utility, but none which have been introduced purely for decorative purposes. In my present lecture I must supplement what I then treated of with some cases of its application which I had not then time to detail, and then proceed to carry on my subject into its more distinctly decorative developments.

Before, however, I proceed further, it may be advantageous—though construction does not, perhaps, come within the range of lectures in this Academy, excepting so far as it exercises an influence upon form—to say a few words on certain practical points which are necessary to the full understanding, even of the artistic portion of the subject we are considering.

In the earlier forms of vaulting, the entire strength lay in the continuous arched surface, which was constructed of brick or of stone, or of rubble bonded at intervals with brick or stone; the rubble or stone being often of the cellular material called tufa, which was much used by the early builders on account of its lightness as well as the tenacity with which it united itself to the cement.

Transverse ribs were next introduced at intervals to strengthen the wider spaces; and, at a later period, the angles were similarly fortified.

These ribs, in early examples, sprang distinctly as separate arches from the impost, the vaulting passing over them. At a later period—even in round-arched vaulting—we find the practice coming into vogue of uniting the ribs, and even the springers of the vaulting itself by cutting them at the base out of the same blocks of stone. We see an early specimen of this in St. Bartholomew's Church.

When the ribs became more numerous it often occurred that five or even eight of them had to spring from one group of capitals; and at times three at least (and subsequently more) from a *single* capital. It is clear that in such cases the three or more distinct forms could scarcely retain their separate existence, but that they must be united in their lower portions in a single block, and that their forms would, more or less, die one into another. Though we can trace this process in Norman work, it was not completely established till some time later.

It will be better understood by means of a figure, in which a transverse rib, two diagonal ribs, and two wall ribs meet at their common springing line, and so intersect and unite one with another as to produce a section at the base composed of portions of them all. Now, a drawing of this group of ribs will at once show that their combined and united form must extend to some considerable height above the springing; and so far as it reaches, which is often some 8 ft. or 10 ft. in height, they cannot possess an individual existence. To this height, then, it is customary to build the group of ribs in horizontal courses, and only to commence the radiating arch-joints where the ribs clear themselves one from another, which usually occurs at one level, though in vaults of great irregularity one rib often clears itself at a lower level than another.

In setting out the relative position of the ribs upon the common springing level, great skill and judgment are requisite, or they will clear themselves one of another so irregularly as to cause great difficulty and needless twisting in the filling in of the vaulting surface. If you set out on plan the side lines of two ribs, and lay down the true position of the mouldings of *one* of them, it is clear that, if the curvature of both were equal, the second rib should be set out with its back line at an equal distance from the points at which the plans of the adjoining lines would intersect; for, in following the curve, both would at a given height reach a point vertically over that intersection, and so the filling in would have a proper starting-point, which would not be the case if they reached that vertical line at different heights. As, however, the diagonal rib (where the ridges are level) has to travel farther to reach a given height, its springing section has to be set *further back* to make it reach the vertical line over this point of intersection at an equal level with the transverse rib. The wall rib in a square vault would be similarly placed with the transverse rib; but in an oblong vault, as it would travel a *less* distance to reach a given level, its springing section must be placed *forwarder* than that of the transverse rib, and, of course, *greatly* forwarder than the diagonal. This is easily adjusted by drawing the curve of the back of the rib, whose position is first determined, drawing against it the vertical line of its intersection with the next rib, and then, from the apex point of the adjoining rib, to draw its curve through the point of intersection, which will give on the springing line the distance *backward or forward* at which the springing section of that rib should be placed.

The ribs of all vaulting of early date are square and flat at the back; the vaulting, which is often very thick, passing over and resting upon their backs. In later works the ribs were usually deeper from intrados to extrados, and were notched, or as it is technically called, "rebated," to receive the vaulting, or at least the lower part of its thickness; for where the surface was not intended to be plastered, the wrought stonework was often a thin casing covered over above by a thicker mass of rough work. The curvature of the courses of wrought stone enabled them to be set without the use of continuous timber centering, and this inner facing, once finished, would itself form a substantial centering for the outer rough vault.

At a later period this outer thickness was dispensed with as a superfluous load. In all cases the hollow space against the wall behind was filled in solid to a certain height to strengthen the haunches of the vault.

The ribs now became beautifully moulded, and sometimes decorated with carving. In early works, as at St. Cross, St. Peter's, Oxford, St. Joseph's Chapel at Glastonbury, and in the aisles at Canterbury, the old Norman chevron was continued in the ribs. The meetings and intersections of the ribs at their apex were usually ornamented with bosses, and beautifully carved. These bosses assumed many varieties of form—sometimes a small rosette, or a little tuft of foliage, merely to decorate the centre of the intersection without covering the mouldings; sometimes the mouldings themselves return round a central opening, with or without foliage; sometimes a head of part of a figure was added to the last-named form in each angle, nearly at the plane of vaulting; sometimes beneath such moulded boss a disk was attached with or without foliage, as if to form a cover to the central opening; indeed, it was occasionally actually the moveable cover of such an opening. In England the usual form is a group of foliage covering the intersection, and frequently containing figure sculpture. Westminster Abbey furnishes admirable examples both of the foliated and sculptured bosses of which I exhibit some casts.

As regards the intermediate surfaces of the vaulting, a curious difference is found to obtain between the methods adopted in France and in England.

In France the courses of stone run parallel to the ridges, as would naturally suggest itself from the original intersecting vaults; while in England they take an irregular direction, as if suggested by placing them at right angles to an imaginary centre line of each triangular space, though really deviating much and irregularly from such a rule.

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A curious effect is produced by carrying vaulting out accurately in a circular aisle or corridor, where it gives the diagonal ribs a twisted line, bending them out of the vertical plane. This is well seen in the apsidal aisle in the Cathedral at Bourges, both in the church itself and the crypt.

I will only notice two or three more varieties of this stage of vaulting, and those of a miscellaneous character.

The chapter-house at Lichfield is an elongated octagon, one of its sides on either hand being double the length of the others, and divided into two bays. The vaulting is a curious elongation of that of the regular octagonal chapter-house: a cell on either hand being interpolated, and the ribs all converging obliquely to the central pillar.

At Caudebec, in Normandy, we have, though of much later date, a hexagon vaulted much as our own chapter-houses, but with a pendant substituted for the central pillar, and ingeniously suspended by a long stone from a constructional vault above.

At Durham, in the octagonal kitchen of the monastery, we have a curious piece of vaulting planned with a view to a central ventilating lantern. The ribs run from every corner at right angles to the side of the octagon, and consequently meet the third angle from that from which they set out, and their intersections leave an octagonal opening equal in diameter to one side of the original octagon in the centre, and this is strong enough to support the required lantern or louvre.

The vaulting of the Lady Chapel at Salisbury is remarkable for the extraordinary slenderness of the columns which support it, being thin Purbeck marble shafts of great height, reducing the width of the chapel by cutting off a very narrow range of vaulting from either side. Somewhat similar in cell is the vaulting of the crypt beneath the Sainte C. Chapelle at Paris, where, to avoid the segmental vaulting which would be the natural result of its limited height, the span is reduced by a range on either side of small pillars;—in this case so near the wall as to necessitate a great amount of stilting, and the introduction of a kind of tracery beneath the transverse ribs to give abutment to the central vault.

I should, in passing, mention that segmental vaulting is very frequent at this period, where the height is limited; and that, even where the main arches are not so, the diagonal ribs frequently assumed that form; indeed, it became necessary wherever the length of a diagonal exceeded double the height of its arch.

Taking this stage of the history of vaulting as a whole, we have peculiarly favourable opportunities of studying it here in London: possessing, as we do, excellent examples of all its most leading varieties.

In the Temple Church we have the curious circular aisle already described, being a specimen of the earliest era of true pointed-arched vaulting; while in the eastern portion, dating some forty or fifty years later, we have the most typical specimen conceivable of vaulting, all springing from a given level, and with level ridges. It is rendered the more marked in character by the division of the three ranges of vaulting by means of the pier-arches, which, coming close under the vaulting, assume the character of enlarged ribs.

Very similar to the last-named is the vaulting of the Lady Chapel of St. Saviour (or St. Mary Overie's), Southwark. The only striking difference being the number of spans and the absence of pier-arches, so that it assumes the form of a space divided into twelve equal and square compartments, and carried by six similar columns.

In the choir of the same church we have an excellent specimen of clearstory vaulting, with oblong compartments and stilted side-cells, worked in a manner somewhat different from the usual ploughshare system.

In the eastern half of Westminster Abbey, including the transepts, we have the vaulting of the oblong space (with ploughshare side cells), and of the square space, and of the four-sided space of all degrees of irregularity; we have apses of two dimensions, viz., the great apse of the Sanctuary and those of the radiating chapels, which are as beautiful specimens of the apse vault as can be found; we have, in the Chapter House, the vaulted octagon, with central pillar carried out in noble proportions and with excellent detail; while in the crypt below is a repetition of the same vaulting, of depressed proportions, and carried out with the severest simplicity.

We have in its inner vestibule two oblong vaults placed side by side, one apparently the square, and the other of the narrowest proportions; and in the outer vestibule beautiful miniature vaulting, on minute columns, and with the segmental arch; while in St. Faith's Chapel, hard by, we have an excellent example of the sexpartite vault. Parts of the aisles, too, are remarkable for the subdivision of their bays by transverse arches of the double orders of mouldings, giving a great nobleness and strength to their effect; and all these varieties are carried out with admirable detail and studied art.

It would lead me into too great length if I were to go into the moulding of the ribs; their combinations where grouping and intersecting one another in the springers, and the mode in which the shafts are arranged for their support. My illustrations will, however, do much to explain this. I must not, however, omit to mention that in French buildings, and frequently in the earlier English specimens, the plans of the abaci of these shafts assume both forms and positions indicating the general section and the directions of the ribs they carry, and that this is even shared by the *bases*; showing that the vaulting was the *very first* thing thought of and designed; and that, from the very floor of the building, it influenced the general design. This was lost in England by the introduction of the circular abacus.*

New Market Hall for Rugeley.—It has been resolved at a numerous meeting of tradesmen and other residents that a new market-hall should be erected. A committee, comprising the members of the Local Board, parish officers, and the chairman of the meeting, was appointed to promote and carry out the object of the meeting.

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* To be continued.

SURFACE DECORATION.

A PAPER on this subject was read by Mr. William Pitman at the Society of Arts on the 16th inst., and was illustrated with a large number of decorations of various sorts lent by manufacturers and others. These included specimens of old leather hangings from Mr. George, brocade and embossed gold papers from Messrs. Corbiere & Son, other specimens of brocade from Messrs. Walters & Son, painted decorations by Mr. Earle, parquet floors from Messrs. Arrowsmith, painted flock papers from Messrs. Scott, Clutterbuck, & Co., good stencilling patterns by Mr. Pitman, French caricature papers from Mr. Pearce, and imitation leather hangings from Messrs. Woollams & Co.

In the course of the discussion which followed the paper,

Mr. Hyde Clarke commented on an observation made by Mr. Pitman to the effect that they ought never to have carpets in which they trod roses under foot. He could not but remember that in the East at this season of the year it was scarcely possible to move one's foot without flower after flower being crushed. It seemed to him by no means unnatural to tread upon flowers and herbage; indeed, more natural by far than treading upon artificial tesselated pavements. This remark applied with reference to carrying the principle of adherence to nature too far; for, in fact, on looking round the room at the various specimens brought forward as the original productions of decorative art, there was very little adherence to nature in any of them. As to the carpets and mural decorations of the East, he had before observed in that room that the school of art in Eastern countries was kept up by the dervishes, or monastic orders, in the same way that similar arts were fostered by the monastic orders of Europe in the Middle Ages. With regard to panelling, he should like to make one observation, because decorators did not always in this respect emulate their predecessors; for it was but too common, on going into a drawing-room of the present day decorated in panels, to find that they were so arranged as to make it appear that the doors and windows of the room had been put in afterwards. On looking at the older examples of this kind of work, it was very rarely that anything of this kind was found. This was a matter not depending on the study of nature, but on the cultivation of taste; and he hoped, as more progress was made in the study of nature, so also they should not forget to develop good taste.

Mr. Crace said there was one topic, that of encaustic painting, upon which he should like to say a word. In his opinion it had entirely failed in this country, and the reason of it, he believed, was not difficult to ascertain. It had not only failed in this country, but the man who had most zealously brought it forward in another country, Kaulbach, had found it was not a safe medium for painting. Encaustic required the use of wax as one of the chief ingredients; and when it became dirty, as it very soon did, and required cleaning, that operation was like cleaning a wax candle, the more you cleaned it the dirtier it became. It was also apt to peel and crack, and, on the whole, he saw no advantage in its use. A mixture of turpentine and varnish would produce quite as good an effect as any encaustic painting, without any of its disadvantages. With regard to what had been said by Mr. Hyde Clarke about carpets, he was rather inclined to agree with the lecturer. On one occasion, some time ago, he recollected that the cause of flowers on carpets was very warmly advocated by Mr. Ruskin; but on that occasion, he believed, it was proved that flowers in relief upon the ground were exceedingly confusing, and that it was much more pleasant and agreeable, as well as in better taste, to have a perfectly flat surface under the feet. As to the remarks which had been made about panelling, it had been said before that you should not criticise what was done by incompetent workmen, but rather go to the work of those who understood their subjects, and sought to carry out the true principles of their art.

Mr. Peter Graham fully concurred in the opinion expressed with regard to the great improvement of taste which had been shown in this country within the last twenty years. In point of fact, the most influential teachers and those who had most conduced to that end were those who formed the establishment at Marlborough House which was called the "chamber of horrors," where they found at once what should be avoided and what should be followed. About the same time Mr. Owen Jones read a paper in that room on "The Principle of Colouring, and on Form in Decoration." It was a most valuable paper, and, as he could testify, had had, with the "Grammar of Ornament," great influence. He (Mr. Graham) was not one of those who thought that there was any superiority of natural taste in the French, but he must admit that they had a much larger number of workmen capable of executing with facility artistic works. In this respect the English were far behind them, although they were steadily, and he hoped rapidly, improving; in proof of which he might mention the various Exhibitions which had taken place since 1851, the productions in which had surprised our French neighbours. He especially mentioned South Kensington, for he believed the French set even a higher value upon that establishment than they did. With regard to style, he was of opinion that they might be very catholic in admitting varieties of style; and, although, in the case of carpets, floral decorations should be treated as flatly as possible, still a very beautiful effect might be produced with them if they were kept in harmony with the decorations of the room and the furniture by which they were surrounded. Of course he condemned large floral devices, but where the carpet was made in imitation of what might be seen in nature, small flowers on a neutral ground, the effect produced would be exceedingly beautiful and pleasing.

Mr. J. M. Blashfield, after referring to the early efforts of Owen Jones, Minton, Pugin, and others, said with reference to the decoration of walls, he might mention, in respect to what had been said by Mr. Pitman on the subject of ground-work for fresco-painting, that he had the honour of making several experiments for Sir Charles Barry, with reference to the best mixture of lime for fresco-painting in the Houses of Parliament. He found the difficulty chiefly arose from the bricks. London stock bricks were generally made partly of ashes, decayed vegetable matter, common mould, and an indifferent quality of clay, containing sometimes a quantity of chalk; and these bricks were very seldom sufficiently vitrified,—only just enough to form imperfect silicates and salts of an absorbent character. These salts by degrees worked their way up to the surface, and would sometimes affect even the strongest mortar,—as strong as Roman cement,—and these decrescent salts would impair the lime, however well prepared, and destroy the colour put upon the surface. On the other hand, a better description of bricks with the same description of lime did not produce the same result; and it had been found by some experiments recently referred to at a meeting of the Institute of British Architects, that abroad tiles were now being made free from the impurities which had been referred to, and perfectly burnt, which, when covered with lime, were quite successful. If they were sufficiently vitrified, and striated upon the surface, so as to hold the plaster, there would be no difficulty, even in this climate, he believed. With regard to ceiling decoration, he might state that there were some remarkably fine examples amongst our English mansions. For instance, Burleigh House hardly contained an apartment on the principal floor the ceiling of which did not afford an example of modelling which any one would be proud to study and imitate.

Mr. Laing said he believed the chief cause of the failure of encaustic painting in England, which was indisputable, was the moisture of the climate. The makers of French paper-hangings said that their ordinary gold-papers would retain their brilliancy anywhere except in Holland and England, where it was found necessary to have some protection from the atmosphere.

Mr. J. D. Crace said there was one thing which every decorator who took an interest in his art must much regret, and that was, that hardly any artists of high standing could be found to make a decorative use of their genius; and if by chance they were entrapped into painting what was called a fresco, they were as much afraid of the surface around it being decorated as if it would infallibly destroy the picture, forgetting apparently that almost every fresco of any importance in Italy was surrounded by decoration in the richest hues, though admirably adjusted to each other. The artist should not be alarmed at the proximity of colour to his work, but should rather strive to so arrange the surrounding decoration that all should form a harmonious whole. Perhaps the most striking instance of this was the chamber at Rome, in which was the famous Raffaelle fresco, "The School of Athens." The chamber was not only decorated in the richest colouring, but it had been done by another hand for itself. Raffaelle had too much good sense, as well as generosity, to destroy the magnificent ceiling of his predecessor, Sodoma, for fear it should injure the effect of his fresco.

The Chairman (Professor Hayter Lewis) said all seemed to agree in the main principles enunciated by Mr. Pitman; as, for instance, that a ceiling should not be a plain white surface; that very bright carpets, chosen because they were pretty in themselves, without any reference to their surroundings, were to be avoided, and in nine cases out of ten it would happen that such a carpet would kill anything else in the room. He could also agree in the denunciation of the marble shams which were too common in halls and staircases; but on some points he must differ from Mr. Pitman. For instance, as to mosaics, he believed that in a climate like that of England mosaics with gold backgrounds, especially where large surfaces were to be covered, were by far the most valuable kind of decoration possible. He had seen much of this sort of work on the Continent, and could not but contrast the grand old specimens in which the gold groundwork was in the glass itself, with the modern imitations, such as that in St. Boniface at Munich, where the background was made simply of gold-leaf put on in the ordinary way. There could be no question that the old mosaic work, done, if not in the time of Constantine, very shortly afterwards, was infinitely superior to any other kind of decoration whatever for large surfaces, which required to be seen from a distance. A good deal had been said as to the imitation of nature, with which he had no desire to quarrel; but, on looking round the room, he saw no single specimen which could in any way be said to be a copy of nature, and in fact the minute copy of details was hardly to be desired, but rather an imitation of the several principles. He had paid much attention to this subject, and had found that in nature there was hardly such a thing to be found as a pure tint; occasionally a bright spot would be found in flowers, particularly in the tropics, but it was always in the flower itself, never in the foliage, which formed by far the larger portion of the vegetable world; all this was a strong neutral tint. It must also be remembered, in decorating rooms, that the space at command was limited; that the carpets and wall decorations had to be contrasted with tables, chairs, and other things, which did not occur in nature. The rule, therefore, seemed to be, to follow the general principle of nature in having a predominant neutral tint, relieved by bright spots or places; and in order to do this effectually and well, nature must be studied a great deal more closely than he feared people were in the habit of doing. He believed the plan which had been followed by the best decorators in past times had been this,—to make the flooring of comparatively neutral tint as a groundwork, then to put in the walls of a deeper tone, and to lavish the grandest efforts on or near the ceiling.

RAILWAY ABANDONMENTS.

THE last stream-tide of speculation, or of enterprise, which sought its exercise and indulgence in connexion with schemes requiring legislative sanction, reached its highest point in 1866, when 633 private bills were petitioned for, and 392 bills received the Royal assent. The collapse came in 1867, and since that year the number of bills petitioned for in each successive session has been much smaller. Not only so, but the character of the bills brought forward in diminished numbers in these later sessions differs considerably from those promoted in the earlier years. In 1866, of the 633 bills petitioned for, 450 involved the deposit of plans, implying that the bills provided for the construction of new works. In the current session, 240 bills appear on the general list, and 139 sets of plans and sections have been lodged at the private bill office in connexion with them, of which twenty-five are for street and road tramways. Since 1867, inclusive, an increased proportion of the bills petitioned for have been for legislative sanction to the abandonment of works authorised in former sessions, for extension of time, financial arrangements, and for additional and various powers. It has been charged against the Legislature, and not without cause, that the procedure in relation to railways has been unwise,

hap-hazard, and has involved extravagant costs. In one direction, the Legislature seems now to be adopting a definite policy, which is calculated to prevent in the future a profligate waste of money in connexion with any new lines that may be projected,—a waste with which railway companies have been, in the past, in many instances, directly and exclusively chargeable. Parliament has sanctioned the abandonment of a number of small and comparatively unimportant lines, but the course of legislation with respect to this matter seems to be the rejection of petitions for abandonment, except upon one or other of two grounds,—the proved insolvency of the responsible party, or agreement and mutual consent among landowners, the inhabitants of the locality concerned, and the promoters.

An important precedent has just been established in the Brighton Company's bill, which has been inquired into by a committee of five peers, presided over by the Earl of Derby. Although an omnibus bill, its backbone and chief provision was for the abandonment of the Surrey and Sussex Junction line, which was originally promoted by an independent company, but eventually adopted by the Brighton Company, with the view, as has been alleged, of enabling them to secure better terms in their traffic agreement with the South-Eastern. The line is above half-made; it would be about twenty-two miles in length, and would give the Brighton a direct route to Tunbridge Wells. The contest in the case of this bill has not been, as many others are, one between powerful railway companies, but between the Brighton Company on the one hand, and a firm phalanx of landowners and inhabitants of the district on the other, who made out a strong case against the proposed abandonment. The Brighton Company had, of their own freewill and voluntary motion, adopted the line: many landowners had been indifferent or opposed to its construction, but had been persuaded into acquiescence, and portions of their property, which they had not desired to part with, had been appropriated by the company, and their estates were now disfigured by the partially completed works which it was proposed to abandon.

It is quite consistent with the declared policy of Mr. Laing, the able chairman of the Brighton Company, that this line should be abandoned if the company can get rid of the obligation. It seems hard that a company should be compelled to complete a line that they know will be worked at a loss. This may be quite true, but the Legislature properly says to companies in effect, "Count the cost before you come for a bill to make a new line; when you have got the powers you ask for, you will be held bound to exercise them; and you must not suppose that you are at liberty to play fast and loose with Parliament and the public in getting and giving up lines to serve your own purposes. It is quite time that land and property holders and the public should have the assurance that when the project of a new railway is agitated, promoted, and sanctioned, it is also settled that 'the scheme is a reality, and not a time-serving sham.'" In accordance with such views, the bill was rejected by Lord Derby's committee.

CHICHESTER.

It is in contemplation to restore the Lady Chapel at Chichester Cathedral as a memorial of the late bishop, Dr. Gilbert. It is not a little singular that the erection of the chapel itself, which forms the extreme east end of the cathedral fabric, and which most probably dates from the thirteenth century, is attributed by many writers to another Bishop Gilbert (called also De St. Leotard), who held the see of Chichester from A.D. 1288 to A.D. 1305.

The projected cattle-market has now so far advanced, that a general description of it may be given. The principal entrance will be from Eastgate-square. A new road, 30 ft. in width, is to be formed. The boundary wall will be composed principally of flint, and generally 6 ft. 9 in. high. Nearly the whole of the roads will have a surface of asphalte. The ironwork of the gates at the entrance to the market are not comprised within the contract. The rails of the pens and cattle-standings will be formed of solid round wrought iron, and will consist of four for pens of sheep, except in the case of one row, which will have five; the pens for pigs and lean calves will have five. The whole of the rings will be built into the wall at the expense of the corporation, the contractors only being required to paint them. Indicators for alleys and number-plates for pens, consisting of Willing & Co.'s patent enamelled wrought-iron, will be placed in conspicuous positions, and all the wrought and cast iron work will have a finishing coat of paint of a chocolate colour. The channels connected with the pens of sheep, pigs, and lean calves, and also between the standings for store cattle, will be lined with Staffordshire vitrified blue plain channel bricks, which it is expected will be obtained from the Albion Blue Brick Works, West Bromwich. The channels in other parts of the market, for fat cattle, will have grooved bricks. The stone used will be Portland—that of a whitish grey colour, with the best fresh and thoroughly burned Glynde lime and White's Portland cement. The brickwork will, it is believed, come from Fareham. The market must be completed by the 31st of December, 1870. Mr. Hawksley is the engineer, and Messrs. Cliffe & Co., contractors.

THE ANCIENT MAP OF THE WORLD IN HEREFORD CATHEDRAL.

The celebrated Hereford *Mappa Mundi*, the work of Richard de Haldringham, who held a stall in Hereford Cathedral A.D. 1290 to 1310, is about to be published, and we would make the fact known. The map itself is the largest, and most quaintly and elaborately finished, of all the known *Mappæ Mundi*, and is, indeed, a literary and archæological gem of the first water. It is being published by a sub-committee of the Woolhope Club, and no effort is spared to get it out with the utmost accuracy. It is not done for profit, but simply as an object of the highest interest, and to ensure the maintenance of perfect copies of the map, before the original gets too disfigured by time to allow of its being copied, or lest anything should happen to it. Its size is 6 ft. by 3 ft., and to bring out the *fac-simile* will require thirty-six lithographic stones of the largest size. The strict accuracy of this *fac-simile* will be guaranteed, and may be tested by every purchaser; for in the 4to. book of descriptive letterpress which will accompany it, will be four large photographs from the map itself, embracing the whole of it (of 15 in. diam. size), and a glass would, of course, at once show any fault, if it exist, by comparing with the lithograph. It is offered at the cost price of its reproduction, and, indeed, the number published will be determined by the cost, when further experience has partially tested the estimates. It is far advanced in preparation, and it is hoped that sufficient subscribers may be got to enable it to be issued by the end of this year. It is rather a more serious item as to cost than the sub-committee had thought; but they have decided that it shall be done well. The Rev. F. Havergal, of the College, Hereford, the College librarian, is the general editor.

THE PROGRESS OF DONCASTER IN 1869.

The town of Doncaster is generally looked upon as a town which approaches something like a finished state. Its rich corporation and its St. Leger are more vivid characteristics of its prosperity than its manufacturing or commercial industries. The town, always noted for its cleanly and well-managed streets, continues to make progress. Several of the streets have been flagged during the year; those include the east side of Marsh-gate, in Cleveland-street, and the east side of Cartwright-street. The Causeway in front of the Grammar School and Bass-terrace has been widened. A large plot of land, which was lately occupied by Mr. W. L. Crowther as a nursery-garden, has been sold by the Town Council, by the sanction of the Lords of the Treasury, for building purposes, for the sum of 3,560*l.* 12*s.* 8*d.* A street 45 ft. wide has been formed. The frontage-ground to St. James-street to the depth of 6 ft., and to the new street to the depth of 9 ft., is to be kept open, and not to be built upon. In addition to the above, a more direct route between the railway-station and the markets is in contemplation. The proposed street is to cross the river Chesswold. It is proposed to fill up the bed of the stream, on which to form the road. The proposed new road would greatly relieve the traffic between the station and the market on busy days. A number of houses have been built during the year. Mr. C. Verity has erected four of ten semi-detached houses, at St. George's-terrace, on the Thorne-road. They are all of brick, with pierced stone balconies and string cornice on the top of a white moulded string-course. Messrs. Lister & Son have made plans for the erection of large business premises in the Magdalens, on the property of Mr. Somerset. The front is of an ornamental character, faced with white bricks, and relieved with stone dressings and coloured brick bands. Several other houses of an ornamental character have been erected in the town and its vicinity during the past year.

APPROACHING INTERNATIONAL EXHIBITION.

The first of the series of Annual International Exhibitions of Selected Works of Fine and Industrial Art and Scientific Inventions will be opened at South Kensington, London, on Monday, the 1st of May, 1871, and closed on Saturday, the 30th of September, 1871. The exhibitions, as our readers know, will take place in permanent buildings, now being erected, adjoining the Royal Horticultural Gardens. The productions of all nations will be admitted, subject to their obtaining the certificate of competent judges that they are of sufficient excellence to be worthy of exhibition.

The first exhibition will consist of objects in the following divisions:—

Fine Arts applied or not applied to Works of Utility.

Manufactures, Machinery, and Raw Materials, including Woollen and Worsted Fabrics, and Educational Works and Appliances.

Scientific Inventions and New Discoveries of all kinds.

Horticulture.

The attention of artists and manufacturers is especially called to Division No. 1. Hitherto the exhibition of works of fine art has been too much limited to the display of pictures and sculpture, disassociated from purposes of utility. Every work in which fine art is a dominant feature will find proper provision made for its display. Painting, on whatever surface, or in any method; sculpture in every description of material; engravings of all kinds; architectural design as a fine art; every description of textile fabric of which fine art is a characteristic feature; in short, every work, whether of utility or pleasure, which is entitled to be considered a work of excellence from the artistic point of view, may be displayed in the exhibitions under the division of Fine Art. Every artist workman, moreover, will be able to exhibit a work of merit by himself as his own production.

PROPOSED IMPROVEMENT OF ST. PAUL'S CHURCHYARD AND LUDGATE-HILL.

At the last meeting of the Metropolitan Board of Works, Mr. H. L. Taylor presented a communication from the Commissioners of Sewers for the City of London, informing the Board of the proposal of the Dean and Chapter, and stating that they were prepared to accept the proposal and carry out the improvement, if the Metropolitan Board of Works would contribute towards the cost of it. Mr. Taylor said the corporation of the City had been engaged for the last eighteen years in endeavouring to accomplish this improvement, and had now got the consent of the Dean and Chapter on the payment of 20,000*l.* The corporation had tried to get a carriage-way on the north side, but he was afraid they had no chance of success, as the north side was very narrow, and it would be difficult to form a carriage-way without removing the railings. It should be recollected that the authorities were willing to bear all the expenses connected with carrying out the improvement at the Ludgate-hill end of the cathedral, including the pulling-down the old railings, and erecting, probably at a cost of some thousands of pounds, a handsome set of railings which would be a credit to the cathedral; and the Dean and Chapter pledged themselves, in case of there being any profit out of the 20,000*l.*, to lay it out in the adornment of the interior. After a discussion, the communication was referred to the Works and General Purposes Committee for consideration and report.

Meantime, we may add, the barriers at the north side have been removed and the south side closed, in order to carry out the arranged-for improvement; and it is to be hoped the barriers will never be replaced.

NEW GLAZING MATERIAL.

IN out-door glazing, whatever amount of care and attention may be exercised, it is occasionally a matter of much difficulty to ensure sound work. This uncertainty arises from various causes; for instance, the non-adherence of the paint-priming to the framework by reason of an interposing film of grease, size, &c.; the different rates of expansion between the glass and the framework in which it has been imbedded; and the action of the sun on exposed portions while a contiguous portion is shaded. In the latter case, large sheets of glass that have been imbedded in deep recesses, or sashes, or stonework, are often broken; but the greatest difficulty in keeping work sound while the glass remains unbroken is found with contiguous and extended metal sash-work, such as that on the roofs of Paxton construction, railway sheds, and conservatories. A more elastic medium than ordinary putty has long been a desideratum, and we learn from a paper recently read before the Civil and Mechanical Engineers' Society, by Mr. R. M. Bancroft, that a new compound of this kind is being manufactured by Sir W. A. Rose & Co., of London, under the name of *Thermo-Plastic Putty*. It has been used on the new large roof of the Great Northern Railway, King's-cross, and other extensive works, and has been severely tested. This putty, we are told, speedily sets hard, retaining a certain amount of elasticity; but when exposed to heat it becomes soft and more elastic, returning to its former hardness and position on cooling, thereby allowing for the unequal expansion of the glass and its frame, insuring sound work for a long period. The cost is not great.

MOVEMENT IN RAILWAYS.

A NEW arrangement for railways will shortly come before the public under the title of the Pannier system. A single row of piles carries a continuous girder on which the train runs, the carriages hanging down on each side to within a very short distance of the ground. The carriages are so arranged that inequality of weight on one side to the extent of a ton will not affect the action. The small quantity of land required, cheapness of construction, and speed, are advantages claimed for it. Mr. Samuel, C.E., has taken the invention in hand, and we shall doubtless soon hear more of it. Extensions and alterations are going on which will place Edinburgh within six hours of London. A scheme has been proposed by means of which, it is asserted, Manchester will be reached by Londoners in two hours. If we understand the proposition rightly, the carriages would pass over rollers kept in motion by turbines. The wind is rising, and we may look to see enterprises launched.

IMPROVEMENT ON COMMON STAIRS IN EDINBURGH.

WE have recently said so much on the disgusting condition of the Edinburgh common stairs, that we conceive it to be a duty, as it is certainly a pleasure, to refer to some substantial efforts we observe being made in the shape of reform. Most of these staircases are so planned, as our readers will remember, as to have the water-closets,—occasionally for no less than *twelve families*,—communicating with them and ventilating into them; and hence it sometimes happens, as in the case of a choked or defective soil-pipe, or a deficient supply of water, that the results are so horrible as to pass the bounds of description. As we have already said, these common stairs are nothing but a common nuisance, and are, no doubt, responsible for a great proportion of the very high death-rate which is at present predominant in the capital of Scotland. It is therefore with pleasure we observe that in the plans for a new block of houses in Inverleith-terrace,—

"Every modern convenience is introduced. It is specially worthy of notice that care has been taken to secure proper sanitary conditions. A ventilating shaft, with a sectional area of 12 ft., is carried up through the tenement, communicating with the open air at top and bottom, and accessible from each house by means of a trap-door. Into this shaft every water-closet has an opening,—an arrangement greatly preferable to the common one of ventilating such places from the common stair. All the soil-pipes are carried down through the shaft; so that, in the event of any repairs being required, the necessary work can be executed without occasioning domestic inconvenience."

Commending this wholesome sanitary practice to the Scottish architects generally as a praiseworthy attempt to get rid of a national nuisance, we may at the same time remind our readers that it is many years since we first directed public attention to the subject. The architect concerned in the block mentioned is not the first, however, who has adopted the ventilating shaft in Edinburgh. Councillor James Gowans has already adopted it as a leading feature of the internal construction of his ornate range of tenements which has been recently erected at the south corner of the Castle-terrace.

THE SANITARY STATE OF WHITEHAVEN.

TYPHUS fever still prevails at Whitehaven. During the last four months there have been, out of a population of 19,000, from 360 to 370 cases in the town, and one patient out of every six died, the total number of deaths having been sixty. This state of matters has attracted the attention of the Medical Department of the Privy Council, who have addressed a letter to the Whitehaven trustees, asking for information respecting the outbreak, and for an account of the steps which the trustees had recently taken to diminish the prevalence of the disease. The reply of the trustees sets forth the extent of the disease, its probable causes, and the nature of the remedial measures which have been adopted. The predisposing causes are described as being the want of a proper system of household drainage, the want of closet accommodation, the over-crowded, over-built, and badly-paved state of many parts of the town, and the dissipated and irregular habits of the bulk of the lower classes residing in the lowest parts of the town, and amongst whom the disease had been almost entirely confined.

INSTITUTION OF SURVEYORS.

AT the ordinary meeting of this Institution, Mr. John Clutton in the chair, a Plea for Culture in the Profession of a Surveyor was read by Mr. Jeremiah Matthews, to which we shall return. This paper was preceded by the adjourned discussion on the paper by Mr. E. P. Squarey, entitled "Farming Covenants," which was concluded, after an animated debate in which many members took part.

The next meeting will be held on Monday evening, April 4th, when the paper by Mr. J. Matthews will be discussed.

NEWCASTLE-UPON-TYNE.

St. Nicholas's Steeple.—The restoration of this vast pile of masonry is fast approaching completion. The scaffolding has been entirely removed, and, with the exception of the south-west angle buttress, the building, although patched, has the appearance of once more setting time at defiance. The buttress mentioned, octagonal on plan, is being rebuilt to project some few inches beyond its predecessor's original face, thereby lending great additional strength to the weaker side of the tower. The task must have been an arduous one both to the architect, and to Mr. Walter Scott, the builder.

National and Provincial Bank of England.—Within the last few weeks a block of property situate at the corner of Mosley and Dean streets, and consisting of four large shops, together with offices, warerooms, &c., has been razed to the ground. The site, naturally a large one, has become the property of the National and Provincial Banking Co., who are about to build themselves new and commodious premises. Mr. John Gibson, of Great Queen-street, Westminster, is, we understand, preparing the plans, and as the corner referred to is openly situated in the principal and most fashionable part of the town, there is a good opportunity for display of skill.

VALUE OF SEWAGE.

SIR,—There are some observations at page 231 in the *Builder*, 19th inst., relative to my remarks on sewage, made at the Society of Arts February 25th, on Mr. Hope's paper. On looking at the report, I see that 1 stands for 100: this is of course a mistake. The value of 100 tons of sewage has been estimated as worth 17s. 6d., or about 2d. per ton. This is the chemist's value and not the farmer's. Sewage, the year round, would not be worth more than ½d. per ton chemist's value. No farmer, would, however, pay such sum for sewage in bulk.

I said 200*l.* gross per acre had been received by growing cabbages; but I did not ask the meeting to credit that such sum could be obtained generally: I named 20*l.* and 25*l.* per acre. The Edinburgh sewage meadows let at rates from 25*l.* up to 45*l.* per Scotch acre per annum. Four Scotch acres are about five statute acres. The "Lessee of Sewage" may learn my views if he will read the appendix to my report on the pollution of the river Thames at Barking, page 10. This report has just been presented to Parliament, and is therefore to be purchased from Mr. King, 34, Parliament-street. In this appendix I give the titles of official reports issued on this sewage question, and your correspondent may read and learn more than he knows at present.

ROBERT RAWLINSON.

ARCHITECTURE IN THE ROYAL ACADEMY EXHIBITION.

AT the last meeting of the Institute, a letter was read from Mr. Smirke, R.A., in reply to one which had been addressed to that gentleman on the advisability of leaving to the architect members of the Royal Academy the selection of drawings sent to the Royal Academy for exhibition. In this Mr. Smirke stated, that the attention of the Royal Academy council had been called to the subject, but that, although the opinion of architect members of the Royal Academy would much influence the judgment of the council on the subject referred to, the council of the Royal Academy could see no reason for altering their existing regulations in respect to the choice and arrangement of works sent for exhibition.

SAFE FOR A YEAR.

SIR,—At a recent meeting of the Neath Highway Board it was stated that the surveyor "had examined the Glynneath Bridge over the river, and found the work now in excellent condition; and that it would stand for twelve or eighteen months, or for a longer period, with occasional repairs and *carefully* watching." (The *italics* are mine: I quote from the report.)

A bridge to be in an "excellent condition" (with regard to strength, I suppose), and yet to be considered safe for "twelve or eighteen months" only, and then requiring patching and "*carefully* watching," appears to me rather paradoxical. Supposing it should last "twelve or eighteen months," would it be safe for general road traffic after that time, even if the patching and watching were continued? I commend these few remarks to the notice of the said highway board, and to the public using this wonderful structure.

J. D.

AS TO THE IDENTITY OF INTERESTS BETWEEN EMPLOYERS AND EMPLOYED.

SOCIAL SCIENCE ASSOCIATION.

RECENTLY, in the meeting-room of the Society of Arts, Mr. Godwin in the chair, Mr. Frederic Hill read a paper "On the Identity of Interests between the Employers and the Employed." Mr. Hill commenced by saying that although many persons would even now assert that instead of the interests of employers and work-people being identical they were antagonistic, it should be remembered that ideas which were now on all hands admitted to be fallacies had been considered to be self-evident truths. No one now doubted that the interests of England and Scotland were identical, yet a few centuries since they were believed to be antagonistic, and an Englishman and a Scotchman were stated to be natural enemies. It was not so long since it was held that the interests of England were opposed to those of her colonies. In the same way, the speculators, who were now admitted to be the best friends of the consumer, and who stored, for their own advantage, no doubt, but also for that of the consumer, corn and provisions till the important time of scarcity, were punished by our laws of a century ago as forestallers and regraters. It was the interest of the employer that the workman should be paid sufficient to enable him to live in comfort, so that he should be induced to continue to labour for him; and it was likewise the interest of the workman that the employer should have his labour at a price which would enable him to compete with others, and, therefore, to continue to afford employment and wages to the workman. It would be as well to consider the points on which their interests were most generally supposed to be antagonistic. First, was the labour and the mode of estimating its value; second, working overtime; third, the employment of apprentices; fourth, the employment of females; fifth, the mode of paying the

wages; and sixth, wages and the hours of labour. On the first point he contended, with reference especially to task-work, that it was the fairest mode of estimating the value of labour, and was as beneficial to the workman as to the employer. Working overtime was, in the same way, a benefit to both parties. The employment of apprentices and of females would, to some extent, cheapen the cost of production, and stimulate to a similar extent the consumption of the manufactured article, thus being advantageous to both parties. As to the mode of paying the wages, he was in favour of payment in kind, or, at least, of permitting the workman to make an agreement to receive such payment with his employer. He had seen excellent results from the system in the iron country, where he had seen the men's wives obtaining various goods at the store, and the men admitted they were more comfortable under the system; but they, nevertheless, thought it should be changed, for they considered a man should have the spending of his own earnings. In Scotland, too, it was most usual for farm servants to be paid partly in kind, and the plan worked very well. The plan had, moreover, the advantage of cheapening the cost of production, and was thus for the benefit of both parties. With respect to wages and the hours of labour, it was for the interest of both parties that a fair day's labour should be given for a fair day's wages, for the reasons above stated.

At the conclusion of the paper, the chairman having invited discussion,

Mr. Paterson said he had listened to the paper with a great deal of pleasure; but, however much all might desire to see harmony and peace, it was not safe to ignore facts. Though he agreed with Mr. Hill that the smaller and more immediate interests were merely in apparent opposition, this could not be so clearly seen on the great points of wages and the hours of labour. If it were Mr. Hill's idea that workmen were never to combine or to strike for an advance of wages, he did not agree with him. How was an accurate understanding to be arrived at? Would the selfishness of men and the similarity of interests, when balanced, produce harmony by the measure of the resolution of forces? The masters were certainly looking after their own interests, and if the men did not look after theirs, the selfishness of the masters would be more powerful. It was the selfishness of the masters that was the greatest bar to the profitable employment of women, for they had to obtain their work at lower prices. If a woman produced a piece of work as well as a man, why was she not paid as well? A woman and two children could earn only about 4s. a week making lucifer-match boxes; those who could earn 7s. a week were exceptions. The women who made clothes for the slop-shops were paid much too little, and were at the mercy of the capitalists, because they had never combined. The employers were able to obtain their work for what they chose to give. Cheapness of production might arise from an abnormal cause,—not the abundance of the means of living, but the abundance of those who worked. It was said that every reduction of wages came back, and in proportion to the articles consumed; but this was not proved. If a carpenter earning 30s. a week had his wages reduced 25 per cent., he would not have a corresponding reduction of rent because his wages were but one element in the price of the house. Ground-rent and other charges entered into the calculation; in fact, the wages formed only 40 per cent. of the cost. If it were the interest of the employer to give a fair rate of wages for a reasonable number of hours, how was it that the journeymen bakers had to work seventeen or eighteen hours a day, while the better class of bakers did not always give better wages or exact less work? It was absolutely essential that men should combine and resist the employers. An employer might be himself willing to give fair wages, but if he had other masters on each side of him who ground their men down to the lowest rate they could induce or compel them to accept, the good employer would be compelled to pay the same rate or be driven out of the market. He was obliged to admit that there had been imprudent strikes, and strikes not by any means justifiable, but it was nevertheless the case that the employers had entirely ignored the fact of the identity of interests.

Mr. Briggs could endorse every word in the paper of Mr. Hill on this very difficult question. He had been himself an apprentice, a journeyman, and an employer, having commenced work fifty years ago, and had had to deal with men and things since then. He thought trade-unions pests of society. He did not mean to say that they could not co-exist with society, but, as they were at present, they were the real pests of society. If they combined themselves to form co-operative or industrial associations he would not object to them. They ought not to combine with benefit societies or with funds for the relief of the sick. A friend of his in Liverpool, who employed 2,000 or 3,000 men, had had a dispute with his hands, and some of them who had been with him for forty years came back and begged he would try to employ them secretly, saying that unless they struck with the others they would lose the benefits of the fund they had been subscribing to for forty years. In his business they had had disputes about inferior hands, and inferior workmen had been left out and left upon the poor-rates because the trade-unions would not allow them to accept a lower rate of wages; but an understanding had been come to that these men should be allowed to take their own prices.

Mr. May said, it was mostly allowed that labour was regulated by the laws of supply and demand, a law which he thought most monstrous. If he understood trade-unions, their object was to obtain for the working man an equitable share in the profits. The more labour there was in the market the cheaper the employer would get it, and the possessor of machinery would thus become more wealthy, while the poor would remain poor. If there were a proper division of the people on the land, there would be no occasion for ladies to work. He had been in a colony, and if he were a working man he would not stay in this country if he could escape from it.

Mr. Ford could remember when mechanics had 4s. 6d. and labourers 2s. 6d. a day, and were not paid sometimes till nine o'clock in the evening on Saturdays, and sometimes on Sunday mornings. Those were the times when they did not understand union; but as the number of the trade societies increased, the condition of the working men had risen, as well as the rate of wages. He objected strongly to payments in kind, and instanced the excavators, whom he used to pay monthly, when making the line from Potter's Bar to Hatfield, who used to have very little money to receive, having taken so much at the chandlers' shops. The men who earned the money were the persons to spend it as they thought proper, and he had managed to let them have their money. Many of them had then sent their wives to the market to buy their goods. Another evil of the truck system was, that the men had to trust to the judgment of one man for the quality of a large variety of things, such as one man could not be expected to understand. He had seen an instance of this at the Co-operative Tailors' Society, in the Westminster Bridge-road, where he had dealt; for, though an employer of workmen, he was greatly in favour of co-operative societies. He had bought socks there for 1s. 7½d. a pair, and had been laughed at at home, for they were such as might have been had elsewhere for about 7½d. He had no doubt the managers had had an honest desire to act fairly, but had been taken in in the City as to an article which they did not understand. In the town where he was engineer the wages of mechanics were at first only 9s. a week, but before he left they were earning 14s.,—from the men beginning to understand their own value, which they could only learn from a union with their fellows. He contended that there was no shirking of work by a skilled mechanic, and that better work was done in the shops now than fifty years ago.

Mr. Vickstone had done work from a very early age, and did not think there had been any very great change in the character of the work so far as the workman was concerned. There was no doubt that machinery was much better, and articles made by machinery were made more rapidly and were better finished than formerly. But he thought the workman did his work less earnestly than he did forty years ago, though he received higher wages. He had had 1,000 people in his employment for fifteen or twenty years, and he thought workmen sought more for the end of the day than they did fifty years ago, when they received less wages. He did not agree with Mr. Hill as to paying wages in kind. Piecework was opposed in the building trades, and if it were opposed in the cotton trades, and in other manufactures, we should be unable to compete with other countries. This subject was a large one. He thought that a man receiving 6s. or 8s. a day ought to give the nation the worth of his wages in work done. He agreed that we must go in the direction of interesting the workman in his business by giving him a share in its profits. An employer from America had said that men did not give their heart to the labour. What was wanted was to enlist the hearts of the workmen, and unless we succeeded in that we should leave ourselves much behind the position we ought to hold in the year 1880. He did not care where door or window frames were made; let them be made durable, they would be done cheapest and best. Why should not the Belgian make something that he was adapted to make? The unerring law of Providence would be sure to have its way. The workman feared too much, and he lost himself when he tried to lessen the amount of work which he put into the day. A few years ago the cry was a fair day's wage for a fair day's work, but it was now how to get a fair day's work for the wages.

Mr. Botley, Mr. Bryan, Mr. Creed, and Mr. F. Wilson having made some observations,

Dr. Hodgson said as to the truck system, it was not free trade, but monopoly under the pressure of the employer. It might be a violation of free trade for the Legislature to say that in no case shall the employer effect an exchange with the employed. A very suitable objection had been raised to the system that it led to one person purchasing all kinds of goods, of many of which he could not be a judge. He was surprised at the remark of Mr. Paterson, as to the reduction of wages not causing a corresponding reduction in commodities, for he ought to know that he could not argue on the reduction of the wages of a carpenter merely, but upon a general reduction in the price of labour: 99 per cent. of the value of all the materials in a house consisted of the value of the labour expended on them. As to the increase in ground-rent alluded to, he would resist his desire to go into the question of how far a man who had done nothing to increase the value of his property should be allowed to enjoy that increase. If we allowed the utmost possible scope to trade-unions, their sphere must still be limited, for there must be a point beyond which they could not go. When masters and men met and settled that the price of a certain piece of work should be 3½d., why should they not have made it 7d.? What was the point beyond which they could not go? Allowing a certain margin, there must be something to regulate it. The gentleman who had immediately preceded him had made some very valuable and some very valueless remarks, but of the former was that by which he called the attention of the working men to the fact that they have in themselves a great amount of capital. Working men complain that they cannot save money, yet they boast of the trade-unions having two or three hundred thousand pounds. Why were these means lying idle? The sooner they took up this point the better.

The Chairman moved a vote of thanks to Mr. Hill, and said the inquiry was one of enormous importance at the present moment. He thought the paper had been a little misunderstood: he had heard nothing in it condemnatory of trade-unions; its object was to show that the true interests of employers and employed were identical, and so he believed they were to a great extent, though not wholly. Probably there had never been so many building operatives out of employ as there were at present, and he thought this was partly due to differences between the capitalists and the workmen. A good deal of foreign carpentry and ironwork was now being used, and the foreign carpentry was very little cheaper than that made at home, if any. He thought there were many wrong points in the rules of trade-unions. With regard to overtime, it seemed to him a suicidal policy to forbid it. Preventing men from doing this was preventing them from entering into the class of employers. In every profession advancement was scarcely possible without working overtime at one period of life. Great lawyers had attained eminence by working fourteen, sixteen, or eighteen hours in the day; and what rising lawyer would listen to the dictation which would forbid him to work when he would? And why should artisans prevent their brother artisans from working? Ask those masters who had risen from the ranks how they had done it, and they would say by piecework and overtime. With regard to apprentices, it seemed to him that they were also wrong. He had heard distressing statements from fathers of families who had

MAYENCE CATHEDRAL.—TWELFTH AND THIRTEENTH CENTURIES.

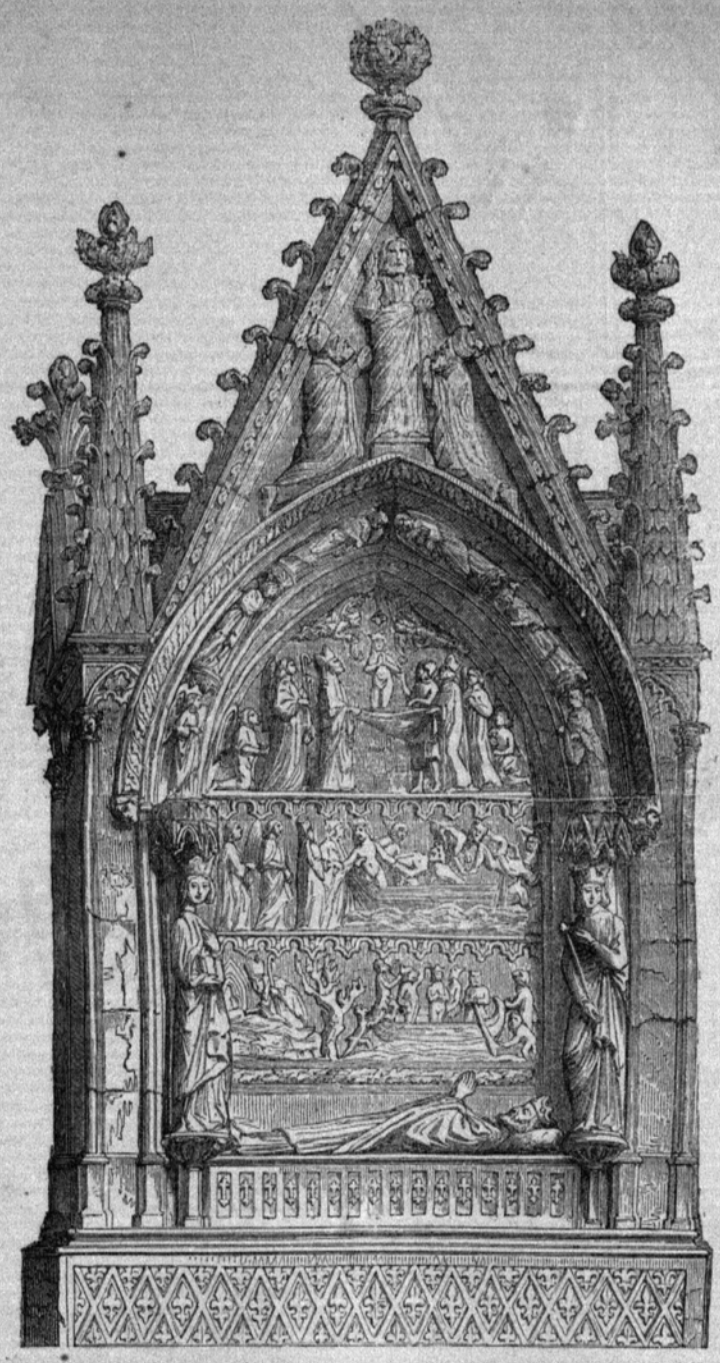
[See p. 238, *ante*.

been prevented from bringing up their sons to their own trades. If a bricklayer was prevented bringing up his son to his own trade, and went to the plasterers, he found the rules there prevented him as effectually. An improved education was of the utmost importance, and on it the success of co-operation must mainly depend. How were these boys to get their education? As to the effect of trade-unions on the work, he feared it had been to lessen the number of really skilled workmen. He could not resist the opportunity, he said, in the hope that it might reach the Government, to urge on them the necessity of immediately going on with some of those large works for which they had the sites, and for which money had been provided, and, by so doing, bringing into employment a number of men. He thought they might put away the fear of strikes, which he knew they felt, and he thought the workmen might do something to meet the times by concession. He concluded by moving a vote of thanks to Mr. Hill.

The vote of thanks was put and carried unanimously.

Mr. Hill, in the course of his reply, said there was not one word in his paper condemnatory of trade-unions. He was a member of the committee on labour and capital appointed by the Social Science Association, which had lately promulgated some resolutions as to the principles on which legislation should be based with regard to trade-unions, and, as an association, they had declared their opinion that not the slightest legislative obstacle should be put in the way of combinations so long as they respected the freedom of others, and exercised no coercion over them. He had no wish whatever to interfere with them at all. As to the truck system, he differed from the views of Dr. Hodgson. Though he felt great satisfaction that upon the whole he had had so much encouragement, he was not surprised that on this point there was a difference. He might be wrong, and he was not so fallible as to suppose himself infallible; but if he were in error, it was error in which he had indulged for many years. Dr. Hodgson said that in the matter of payment in kind, there should be perfect freedom of action between the employer and the workman. Would it not be an interference with freedom if we prevented him from making a bargain that the labour shall be paid for wholly or in part in kind? The law now prevented such a bargain being made, and he thought it an interference with freedom.

PROPOSED BUILDING FOR REFORM CLUB, MANCHESTER.——Messrs. Salomons & Jones, Architects.



TOMB OF DAGOBERT, EXECUTED BY ORDER OF ST. LOUIS, IN THE ABBEY CHURCH OF ST DENIS.

It represents the King carried away by Demons, after his Death, and rescued by Angels and Fathers of the Church.

Thirteenth Century.

[See p. 233, *ante*.

MANCHESTER REFORM CLUB.

WE give a view of the Club-house now in course of erection in Manchester. The basement is to be let as stores, the ground-floor as offices; the Club, starting from the first floor, is approached by a grand central hall and staircase. The hall and ante-hall are to be groined, and the walls decorated with terra-cotta and marble columns. The staircase is to be of oak, with carved balusters, inlaid with various kinds of wood. On the first floor is a large dining-room, 80 ft. long by 32 ft. wide, with panelled oak and pitch-pine ceiling, decorated with gilding. The doors and dado are of carved oak. On the floor are also strangers' dining-rooms, coffee-room, &c. On the second floor is a large billiard-room, to hold four full-sized tables, card-room, smoking-room, and so forth.

The front and side elevations are to be of ashlar work, and with polished granite columns, red and grey, and different coloured polished marbles. The contract is taken by Mr. Nield, builder, Manchester, for 20,000*l*. The architects are Messrs. E. Salomons and J. P. Jones, of Manchester and London.

EXISTING SCIENCE CLASSES FOR WORKMEN.

SIR,—The people of this country seem now to be thoroughly aroused by the Education question. Efforts are being made by all classes to place the British workman in, at least, as good a position as his Continental neighbour, both as regards primary and technical knowledge, by opening up new sources of instruction.* This is as it should be. Let it not be overlooked, however, that it is just possible that the old means by which many of us have gained our knowledge, may be capable of improvement; and it is in the earnest desire that this may be effected, that I wish to call your attention to one particular source of education, the Science Schools in connexion with the department at South Kensington.

I am an old workman-student in these schools, and, as a successful one, received, after the examination last year, a list of all the students who passed a stage, together with a statement of the total who failed; that is, who were in fact "plucked." On comparing these together, I was astounded at the relative largeness of the latter, compared with the former, and was inevitably drawn to the conclusion that there must be something wrong somewhere. Take, for example, the three cognate subjects of inorganic chemistry, magnetism and electricity, and sound, light, and heat. In the first subject, of 2,074 examined, 1,298 passed, and 776 failed. In the second, of 2,508 examined, 1,460 passed, and 1,048 failed; and in the third, of 1,352 examined, 985 passed, and 367 failed. How is this to be accounted for? In the first place, it appears to me to arise to some extent from the insecurity of the reward. The teachers receive for their services a reward, which, though depending entirely upon results (that is, no pass, no pay), yet may be cut down at any time by "My Lords;" as witness the late minute, issued in the middle of this session, which not only reduces the pay, but abolishes entirely the lowest class in each subject, which was really the one which paid the best. The teachers are consequently disheartened; they know very well that the number of those who will fail at the next examination will, by this arrangement, be largely increased. Their reward is also further lessened by the reduction of the fees to be paid for the successful students. I cannot fail to observe the want of interest in the classes manifested by the teachers since the issue of the minute, and predict a very unsatisfactory examination in May next in consequence.

* *En passant*, the British Workman must also put his own shoulder to the wheel, and help himself.—ED.

Another cause of the non-success of many of the students arises from the want of proper instruments and apparatus to illustrate the lessons. In the case of the subjects above mentioned, a great deal of apparatus is necessary, and the Department,—very generously, in my opinion,—engages to bear a considerable proportion of the cost of this, provided the local committee pay the remainder. This, in many instances, they neglect to do, and hence failure in teaching. I have in my mind's eye a case in point. In a large seaport town in the North of England a school of science is established, with a local committee of some thirty gentlemen, most of them wealthy and occupying influential positions. Several subjects are taught by competent teachers, certified by the Department, one of whom is very experienced, and holds a very distinguished university position. Yet this school is so ill-provided for, that the value of all the apparatus they possess is under 5*l*. No wonder if failure results. But it may be asked, "Why do not this committee subscribe and call upon the townspeople to subscribe to furnish the school properly?" Well, the committee have contributed, and the townspeople have contributed, to the extent at least of 400*l*., which the committee have invested, not in the purchase of instruments and apparatus, but in a 400*l*. *dock bond*, the interest of which, some 18*l*. a year, they apply to the payment of current expenses, which is in no case considerable, as by the favour of a private establishment, and other arrangements, they have neither rent nor taxes to pay.

If the conduct of this committee, who, by the bye, have a rule that five form a quorum, and only about that number attend, so that the committee is virtually reduced to that extent; I say, if the conduct of this committee is at all a sample of that of other local committees of Schools of Science, I do not at all wonder at the non-success of the students. I, as a student, protest against it, because by their mismangement of the funds, we are deprived of the full benefit of the teaching. Our success is not equal to what our fellow-townsmen, who have subscribed, have a right to expect, and our teachers are by that means unjustly deprived of their fair earnings, and as a consequence, take less interest in our success.

Another thing I may remark here is, that formerly it was the practice, for one or another of the local committee to attend every lecture to enter the names of the students present. Sometimes two or three came, and showed by their presence at least, that they took a lively interest in the success of the school. This rule has somehow become relaxed, as in the school which I attend no committeeman has put in an appearance this session as yet, and one only attended once or twice last session.

I may be told in reply to my strictures, that one cause at least of non-success rests with the students themselves, in their want of appreciation. I am prepared to admit this to some extent, yet I observe that generally, if you can get a working man to attend school at all, he does, in fact, attend more regularly, and applies himself more closely to the work than many others in a higher position. He soon begins to find out that any scientific instruction, no matter what, has a practical bearing upon the business of his everyday life; and apart from the prospect which its acquisition opens to him of bettering his position in the world, he is enabled to take immediate advantage of the teaching to lighten his daily labour. A STUDENT.

THE PALACE OF WESTMINSTER.

MR. W. H. GREGORY asked the First Commissioner of Works whether he had intimated his intention of placing in the hands of his own department all the works of the Palace of Westminster which had hitherto been under the supervision of an architect; and, if so, whether he would inform the House of the name of the gentleman connected with the Office of Works to whom these professional duties were to be entrusted.

Mr. Ayrton said the question involved some misapprehension of the facts connected with this subject. The amalgamation to come into effect at the commencement of the present financial year would be that the Palace of Westminster would be placed, in the same manner as the other palaces of her Majesty, under the charge of Mr. Taylor, one of the assistant surveyors. His office was not well described by its title, because it involved duties of very considerable importance. The ordinary works were carried on under his immediate direction and guidance, and whenever any extraordinary works arose they were carried on by those who were specially employed for the purpose,—for painting, an artist; for sculpture, a sculptor; and for architectural work, an architect. He would perform his functions under the new system, under the supervision of another officer recently established in the Board of Works, called the Director of Works. Her Majesty's Government had selected a gentleman of well-known high position, namely, Mr. Douglas Galton.

ARCHITECTS' RIGHTS.

SIR,—Apropos of your recent remarks on the demand made by the Department of Works on Mr. Edward Barry, that he should surrender up all the drawings and other documents prepared by himself and father for the Houses of Parliament, allow me to observe that, should he unfortunately be compelled to yield to this arbitrary and unprofessional demand, the document issued under the great seal of the Institute professing to be a statement of the "professional practice and charges of architects" may as well at once be set down as mere moonshine, as it clearly specifies that the "architect is paid only for the use of the several drawings," and that they remain his property.

I am sorry to say that the conduct of the Institute Council with reference to this very document of theirs since its publication rather favours the view that it is a mere dead letter, as will appear from the following:—

The writer had once the misfortune to have to try the question of the truthfulness or otherwise of this document in a court of law. In doing so he was supported by four architects of eminence, who all deposed to its being, what it professes to be, a fair statement of the charges, &c., "now usually and properly made." The other side, however, had no difficulty in finding two architects of some note, one being a Fellow of the Institute, to come forward and swear that the terms of the Institute paper were not either usual or proper, and, as might be expected, the jury disagreed, and the matter remains undecided up to the present.

Let Mr. Barry therefore be prepared, if he should have to contest his question with the Government, to find Fellows of the Institute ready to oppose him, and to give any evidence against him that may be required on the subject of professional usage, however contrary to what has been hitherto recognised, damaging to a professional brother or to the interests of the whole profession. Doubtless the member who on the occasion above mentioned contributed so effectually to bring the rules he had himself subscribed into disrepute, is equally ready to do so still, and is available, should the Department of Works need any evidence, to rebut what may be adduced on the side of Mr. Barry.

I was simple enough to imagine that conduct such as this would be met by some rigorous measures on the part of the Institute Council, elected for the purpose of "promoting uniformity and respectability of architectural practice;" and accordingly brought the matter at once before it, in the hope that something would be done to prevent the recurrence of similar unprofessional conduct in future; but all the notice taken of my complaint was a general resolution to the effect "that a member of the Institute ought to support the Institute scale;" and on my further remonstrance as to the inefficiency of such generalities, I was informed that the paper in question was only "recommended, and could not be enforced, nor could any member be called to account relative to it."

However, were I in Mr. Barry's position, *malgré* the apathy displayed by the Institute, I should most certainly refuse to part with a single document; and, fortunately for him, being in possession, he has a ground of vantage over the department, which I hope he will not surrender. As to another important element in his case, the endeavour to dismiss or supersede him, it may be of some importance to observe that Mr. Keeling having courageously tried this question out with the directors of a hotel company some years ago, the ruling of Chief Justice Erle was to the effect, that "an architect once employed for a particular work, cannot be dismissed till the work is complete."

WM. FOGERTY, F.R.I.B.A.

THE SPIRIT OF ART.

THE mightiest courts and empires sank
In the surging waves of time,
But Art clung fast to the saving plank,
Where it lash'd its Ark sublime.
Babel, upraised, was stricken by God,
And Babylon sway'd and fell;
And Carthage and Nineveh felt the rod,
As their works of Art still tell.

The Spirit of Art o'er many lands
Diffused an inspiring taste,
Pyramids sprang from the arid sands
Of Egypt's desolate waste.
And Greece uprose with a joy elate,
Unrolling her glorious chart,
And turn'd the sod of a school still great
In the Classic fields of Art.

Then Rome of the Tribunes, Pagan Rome,
Next plumed her wings for a flight:
To cope with her rivals nearer home
She claim'd o'er the world a right:
Tribute and spoil from every source,
Were taken to deck her domes,
Till Art and empire, 'neath a curse,
Collapsed in the catacombs.

Not lost, but like the fabled bird,
From out its ashes anew,
Eternal Art, unsepulchred,
Both Classic and Christian too,
Walks through the world with a stately mien,
Despite of the Vandal's ban,
The good and worshipp'd angel queen
Of the gifted mind of man.

Oh! hallow'd Spirit of ancient Greece,
Though ages have pass'd and gone,
The glory that's yours shall aye increase,
Though to dust drops the Parthenon;
And Rome, when thy Coliseum falls
(*Now* Rome, after Pontiff's heart),
You'll still live on in your marble walls
And sculptured works of Art.

Nor will we pass here by default
The grand and glorious page,
Of tower and chancel, aisle and vault,
Britain's rich heritage.
Last, though not least, the Goths have raised
To heaven, as things apart,
Temples unequall'd, God be praised!
In the greatest fields of Art.

THE PROPOSED NEW STREET FROM THE NEW MEAT MARKET TO OLD STREET.

IN a great city like London, where all the commercial world do congregate, where representatives from every colony and foreign States assemble for trading intercommunication, and in face of the fact that the commerce of the world's metropolis doubles itself every seven or eight years, the necessity for adequate traffic accommodation, and the provision of means for easy ingress and egress between the New Meat Market and other provision and colonial produce markets to the other densely populated suburbs north, east, west, and south of the metropolis, is so universally acknowledged and self-evident as to need no comment. The recent improvements in the City have already provided us with three great trunk-roads from the south-west and north to the central market; but, in the east, though a wide and commodious thoroughfare is already provided as far as Old-street, yet, in the most crowded and important section of the City proper, there is no outlet to the New Market or to the southern and western thoroughfares but by a few narrow and ill-conditioned streets, which, during the first half of the day, are in a state of perpetual block. The present scheme is designed to effectually obviate the continuance of such an obstacle.

The proposed connecting street would be 400 yards in length, at a total cost of 30,000*l*. (inclusive of compensation, purchase of property, &c.); but from its position it would save 300 yards each way to every vehicle traversing that route; and also, commencing, as it would, at the north-eastern end of the New Meat Market, furnish the fourth and completing trunk-road to and from the provision markets of the City. The project has been already submitted to the several vestries of the metropolis and its suburbs, the Metropolitan Board of Works, and the Court of Common Council, and met with their favourable consideration and approval. The only course remaining for the citizens and public generally is to give their individual support to a scheme so obviously beneficial to the interests of the traders and inhabitants of the entire metropolis. A CITIZEN AND RATEPAYER.

BUILDERS' TENDERS.

SIR,—I sometimes see in the *Builder* absurd specimens of tendering. The following in a small way is a fair sample of what is occasionally done in this town (Leicester):—

For painting the outside of Messrs. Evans and Stafford's warehouses, Campbell-street:—

Stephenson	£65 0 0
Widdowson	47 0 0
Dean	33 0 0
Whitmore	29 0 0
A. Knight	24 0 0

R.

DANGERS OF KITCHEN BOILERS.

AN article in the *Builder* of March 12th, p. 209, points out the great danger that exists in all closed kitchen boilers that are not provided with adequate safety-valves, whenever a frost occurs severe enough to freeze the water in the communication-pipes; but the article takes no notice of the danger of explosion from another source, which by most people would be quite unsuspected,—as it was, in fact, by me. I refer to the partial or complete stoppage of the pipes from a deposit of iron in the form of very hard concretions adhering most firmly all along the bore.

Finding the action of my apparatus (which consists of a closed boiler supplying a bath about 13 ft. above it) unsatisfactory after being in use five or six years, I took it down, and found the pipes lined throughout with a solid irony concretion. Very fortunate it was for me that I did examine into the matter, for the concretions had in parts so nearly closed the bore of the pipes that if I had continued the use of the apparatus a year or two longer I am convinced the stoppage would have become complete, and an explosion inevitable.

The water used is remarkably pure, containing no appreciable quantity of lime or iron, so that the concretions must have been derived from the boiler and pipes. That a deposit should take place might have been expected, but its extreme hardness and solidity did surprise me.

It may be observed that such boilers supplied with calcareous water must be liable to the same danger, though I am not aware that any instances have been recorded.

One object in writing is to inquire how the report of the "Manchester Steam Users' Association" may be obtained? as I observe your article quotes from their chief engineer a promise of entering on the subject of safety-valves for such boilers. P. P. C.

CHURCH-BUILDING NEWS.

Aveton Gifford, Devon.—The ancient church of this parish has lately been re-opened, after undergoing renovation and repair. The building consists of nave, chancel, north and south transepts, and north and south aisles adjoining the chancel only. The ground plan of the church was originally in the form of a Latin cross, a low and massive tower being placed at the intersection of the arms. The main entrance is on the north side, protected by a porch, with parvise over. The style of the building generally is Early Decorated. The works that have been executed comprise new roofs throughout; new copings and finials to gables; new stone windows, glazed with cathedral tinted glass; open seats of pitch pine; new pulpit and other fittings of oak; tiled floors by Minton; &c.; and the whole has been carried out by Mr. J. Willcocks, of Aveton Gifford, under the direction of Mr. H. Elliott, of Plymouth, architect. The total cost of the work is about 2,500*l*.

Bristol.—The site of the proposed new "Green Bank" Cemetery, Stapleton-road, is now in the hands of the contractor, Mr. William Brock, of Temple Meads. The site selected is elevated, and may be seen from the Midland Railway, and from many parts of the city; it is undulating, and the soil a compact sandy marl. The quantity of ground purchased by the Burial Board is about 20 acres, 12 of which will be first appropriated for interments. The works under contract by Mr. Brock and by Mr. Nelson, of St. Michael's Hill, comprise Episcopalian and Nonconformist chapels, vestries, keeper's lodge and office, mortuary, boundary walls, entrance-gates, roads, paths, and planting. The tenders for the works sent in by fifteen firms, according to a

notice already given in the *Builder*, ranged from 4,562*l.* to 6,143*l.* The works have been designed and will be carried out under the direction of Mr. Henry Masters, architect and surveyor, Bristol, and are expected to be completed by the end of this year.

Littleton.—The little church of North and Middle Littleton, near Evesham, is about to be restored, at an estimated cost of 1,200*l.*, towards which 850*l.* have been already raised. Mr. Preedy is the architect engaged; the builder has not yet been fixed upon. The restoration will involve new roofs throughout, the chancel arch will be raised and widened, also the arch of the north transept, and a new vestry will be built. It is feared that some of the walls may require rebuilding, new windows must be inserted, and several old ones restored. New seats, pavements, and doors are required, besides other fittings: and the masonry of the tower will have to be looked after. There are many relics in the building which it is hoped will be preserved, including the sanctus-bell cot, a squint, the entrance to the rood-loft, Norman font, piscina, &c. South Littleton Church also stands in much need of restoration, but nothing can be done to it at present.

South Lynn.—A reredos has just been completed in All Saints' Church. It consists of a centre, having three large panels with smaller ones between them, carved canopies, and pinnacles. The panels are polished alabaster, inlaid with a cross in gold mosaic, and the sacred monogram in red marble. Each side of the wall, as high as the window sill, is faced with stone, with incised patterns upon it, finished with a panelled and carved cornice. Above this, the whole of the east wall has been painted and diapered, relieved by two medallions of St. Peter and St. Paul, painted on a gold background. Two gas standards, the work of Messrs. Hardman & Co., Birmingham, have been placed within the altar-rails. The painted decoration of the east wall was designed and executed by Messrs. Lavers, Barraud, & Westlake, of London; and the reredos was carried out by Mr. William Brown, of South Lynn, from the design of the architect, Mr. William Smith, of London.

Newbury.—The erection of Highclere New Church has proceeded satisfactorily, and the building is now roofed in. It is being built at the cost of the Earl of Carnarvon, and will probably be consecrated in June by the Bishop of Winchester. The architect is Mr. G. G. Scott, and the work is carried on by the contractors under the supervision of Mr. Blackie, who holds the appointment of clerk of the works on Lord Carnarvon's estate.

Pontypool.—A new church is about to be erected at Tow-hill, Pontypool. The edifice, which has been designed by Mr. W. Adams, Newport, will comprise porch, nave, and chancel, with a vestry on the east side. The chancel and altar are to lie towards the north, and the porch to be affixed to the south end. The nave, which is to be fitted with movable wooden seats, is to be 53 ft. long, and 21 ft. wide. The chancel will be 18 ft. by 19 ft. 6 in. wide. On the south of the nave roof is to be a pointed bell-turret. The south front will contain above the porch two large windows, a double lancet surmounted by a circle, with small single-light windows above. The north window will consist of a triple lancet, and two circles. The windows in the sides will be of corresponding pattern. The material for the external walls will be blue Pennant stone, relieved by ornamental courses of red bricks.

Huddersfield.—During the last year the interior of St. Thomas's Church has been considerably improved and beautified by the remodelling of the organ and decorating of the chancel. The organ, which (on account of its great elevation) had hitherto been an obstruction to a circular window in the apse at the east end of the south aisle, and was also played from a gallery, is now so arranged that the player sits in the chancel, and in a line with the choir stalls. These improvements, and the decoration of the organ pipes, have been executed by Messrs. Connacher & Co. The decorations, which have been executed by J. W. Knowles, of York, comprise the powdering of the panels of the roof, picking out the ribs and bosses with gold and colours; diapering the walls, on the east end of which are painted the Agnus Dei, Pelican, and emblems of the four Evangelists; on the side walls, the Creed, Lord's Prayer, and Commandments have been illuminated. Under the painted decoration, and in a line with the top of the reredos, the walls have been covered with majolica and painted tiles, the south side of which has been pierced for the reception of a credence niche: a moulding of Caen stone (corresponding with the one on the reredos) divides the tiles from the painted work. The reredos, pulpit, and marble work, have been cleaned, and the marble repolished, by Mr. Cole, of York, sculptor, who likewise carved the credence niche and mouldings. The circular window over the organ has been filled in with stained glass, by Mr. J. W. Knowles, representing King David playing on a harp. This glass is the gift of Mr. L. R. Starkey.

Hessle, near Hull.—All Saints' Church, Hessle, has been re-opened. The church has been nearly rebuilt. The chancel was taken down, and built up again further back, care being taken in the rebuilding so that stone by stone was placed as before. By this means the nave received additional length. Increased width was also gained by adding to the side aisles, and in carrying out the enlargement the different character of the masonry is preserved as indicating the several dates of the workmanship. In the nave the whole of the modern seats have been removed, and will shortly be replaced by open pew benches of pitch pine. The roofing is open-timbered work, varnished. The clearstory has been rebuilt, and the windows of it are opened for ventilation by a contrivance concealed by the moulded string-course running over the arcade. The west doorway has been opened out, and draughts are prevented by curtains hanging within all the doors. Two painted windows have been placed in the south aisle, one by Mr. C. L. Ringrose (subject, the Resurrection), and the other by Messrs. H. & J. B. Barkworth (subject, the Ascension). The west window has also been restored. The heating apparatus has been supplied by Messrs. Rimmington & Sons. The middle chancel has been entirely rebuilt by Lieut.-Col. Pease. The seating is of grained oak. The bench ends are filled with tracery and surmounted with poppy-heads. The fronts of the seats are ornamented with linen patterns. The roof is similar to that over the nave, but more ornamented. A reredos, sedilia, and credence have been executed in Caen stone. The reredos consists of seven divisions, separated by buttresses and pinnacles, and covered with ogee-shaped heads, small cornice, and carved cresting. The panels of the buttresses are filled with pale green marble. The three centre compartments of the reredos are filled with Venetian mosaics, by Dr. Salviati, representing the cross, the pelican and young, and the pascal lamb. Above this rises the east window of painted glass, representing Christ sitting in majesty, surrounded by saints, patriarchs, apostles, angels, &c. The chancel is divided from the aisles by wrought-iron screens or grilles, and the sanctuary is enclosed by wrought-iron work, and railings of oak mounted with brass. The encaustic pavements are various in design, the principal colours being red with black bands, gradually growing richer in detail towards the east. Previously to the restoration, the whole of the internal stonework was covered with several thick coats of paint and whitewash. These have been entirely removed by the use of Messrs. Naenaire & Co.'s solution, thereby avoiding the "tooling" usually adopted for the removal of paint-work from stone. In clearing away this paint, several remains of old ornament have been discovered on the caps and arches of the arcades. These have been preserved as far as possible. The organ has, according to the present custom, been placed in the north aisle as much out of sight as possible. It is a small instrument by Forster & Andrews, but will ultimately have to give place to a larger instrument. The entire work of restoration and enlargement has been carried out from the designs and under the superintendence of Mr. R. G. Smith, of Hull, architect. Messrs. Simpson & Malone have been the builders; the other contractors being, for iron-work, Messrs. Hart, Son, Peard, & Co., London; for painted glass, Messrs. Hardman & Co., Birmingham; for encaustic tiles, Messrs. Mann & Co., Broseley; and for church furniture, Messrs. Frank Smith & Co., London. Messrs. Simpson & Malone's contract was for 5,500*l.*

Tardebigg.—The new church of ease for the parish of Tardebigg, at Webheath, has been consecrated by the Bishop of Worcester. The late Baroness Windsor erected and endowed the church, the site being given by Mr. R. Hemming, of Bentley Manor. The edifice is dedicated to St. Philip, and has been erected from designs by Mr. Preedy, architect, London, by Messrs. M'Cann & Everitt, builders, Malvern. The building is of red and grey stone from Hewell and Tunstall quarries, with Bath stone dressings and decorations. It consists of nave and chancel, with porch, vestry, and bell gablet. The style is Early English. The sitting accommodation is for 200, and all the seats are free and unappropriated. In the chancel, over the altar, is a stained glass window in three compartments, representing the Crucifixion, Abraham offering up his son Isaac, and Moses lifting up the Brazen Serpent.

Runhall.—The church of this parish has been re-opened, after repairs and partial restoration. The buttresses have been rebuilt in cement, the walls have been repaired, and the simplest possible roof, supported by posts from the ground, and stiffened by longitudinal and transverse curved braces, has been made to relieve the side walls from pressure, and to give to the ugly square-looking room of late years the appearance of a church, with nave and side aisles, a treatment which is found in the ancient church of Winterton, in this county. The restoration of the chancel being found impracticable, a raised dais, paved with tiles, for the Holy Table, with singers' seats on either side, has been placed at the east end; the remaining space has been provided with open benches of deal, and the tower has been made available for a vestry. The porch, the stone and glass of the windows, and the tower sounding-windows have been patched up as much as the funds would admit of, and these, with the chancel, invite the labour of future church restorers. The contract was undertaken by Mr. Hubbard, of East Dereham, who carried out the works under the architect, Mr. Edward J. Tarver, of London. During the progress of the work, crocketed fragments of the ogee-headed niche in the east wall were discovered, built up in a recess between the two north windows, and there were found above and around the east wall niche, powderings of the monogram S. K., as well as the remains of a fresco figure on the eastern jamb of the adjacent window. They have reference, probably to the altar of St. Catherine, before which Margaret, widow of Robert de Berneye, knt., was buried in 1416, and to which she gave a picture of St. Catherine.

Poole.—The Bishop of Salisbury has consecrated St. Mark's Church, near Poole, in Dorset. The edifice, which cost 5,000*l.*, was the gift of Miss Georgina Talbot, who laid the foundation-stone some two years ago. This lady, who erected a large number of almshouses in the neighbourhood, did not live to see the church completed. Her remains have been buried in the churchyard of St. Mark, which has also been consecrated.

Brighouse.—St. James's Church has been consecrated by the Bishop of Ripon. The church is in the Early English Gothic style. It consists of nave, chancel, aisles, organ-chamber, &c., and in place of the usual tower and spire, which it was intended should adorn the structure, a little bell-turret rises at the western end. The nave is 69 ft. in length, 22 ft. in width, and to the apex of the open-timbered roof, 48 ft. in height. The aisles are 10 ft. 3 in. wide. The chancel is 28 ft. long, 18 ft. wide, and 39 ft. high. On the south side of the nave there are five bays, with the columns circular and the pointed arches moulded. On the north side there are only four bays, the remaining space having been appropriated for a porch. The chancel-arch springs from carved capitals. Along the aisles the windows have triple lights and tracery, and in the clearstory the windows are alternately cinquefoil and polyfoil. At the western end the window has four lights and tracery, and has been filled with stained glass. Medallions are introduced with full-sized heads of the four Evangelists and the four major Prophets. The eastern window has not yet been enriched with stained glass. The seats are of deal, stained and varnished, and open. Sitting accommodation is provided for 600. Messrs. Mallinson & Barber, of Halifax, were the architects. The total cost has been 3,800*l.*: 600*l.* were paid for the site.

Hartlepool.—St. Hilda's Church has been re-opened for divine service. The entire chancel has been rebuilt, in conformity with its original design, and the church will now seat 120 additional persons. The east window is of great size, and is the gift of Mr. Emerson, of Pooner, Cheshire; and another in the south aisle has been put in by Miss Dixon, of Seaton. Mr. Pritchett, of Darlington, was the architect. the total cost of the work is 1,600*l.*

Birstal.—The foundation-stone of a new church has been laid at Brownhill, a district contiguous

to the parish and town of Birstal, but which is situate in the borough of Batley. The church, which is expected to be completed by the beginning of November next, is from the design of Messrs. Sheard & Hanstork, of Batley, architects; and the following are the contractors for the several works required in the erection:—Mr. Jas. Booth, of Batley, mason's work; Mr. Joe Willans, of Birstal, joiner's; Messrs. Hill & Nelson, of Wakefield, and Thos. Armitage, of Birstal, plumber's. The edifice will be Early English, the total length, including the chancel, being 90 ft., and the width, including the aisles, will be 48ft. It will consist of nave, chancel, and vestry, with open-timbered roofs; and, as soon as the funds will permit, a tower and spire will be added to the building, and the baptistery will be placed beneath the latter. The total cost of the building, exclusive of the tower, is estimated at 1,700*l.*, and the site has been presented to the committee by the Earl Wilton.

STAINED GLASS.

Emmanuel Church, Weston-super-Mare.— A window has been erected in the west end of this church to the memory of Mr. Henry Davies, a gentleman who was well known in the locality, and who died from an accident about two years since. The window has been designed and executed by Messrs. Clayton & Bell, of London, and contains full-length figures of Abraham, Moses, David, and Elijah, with cartoons underneath the figures, severally representing Abraham offering his son upon the altar; the passage of the Red Sea; David beheading Goliah; and the sacrifice on Mount Carmel. In the upright piercings of the tracery in the upper part of the window, there are also figures of small dimension of Enoch and Samuel, Isaiah, Jeremiah, Ezekiel, and Daniel. The cost of this work, we understand, is about 150*l.*

St. Mary Redcliff.—A window in memory of Edward Colston, the great Bristol citizen, is about to be placed in the north transept of this church. The top or first row of lights will be filled with four designs illustrative of receiving the stranger, visiting the prisoner, teaching the ignorant, and leading the blind. A corresponding series, consisting of feeding the hungry, giving drink to the thirsty, clothing the naked, and visiting the sick, occupies the lowest row. The centre lights illustrate the parable of the good Samaritan. In the first we have the priest and Levite passing by; in the next, the good Samaritan succouring the wounded man; in the third, the journey to the inn; while the fourth represents the payment at the inn. At each corner at the foot are the Colston arms. The tracery will be filled with coloured glass. The execution of the work is in the hands of Messrs. Clayton & Bell, of London. It is expected that the Colston window will be ready by the 21st of April, on which day the Canynge festival is to be held. The estimated cost is over 450*l.*; 40*l.* of which remain to be collected.

Bushbury Church.—A memorial window has been erected at the west end of the south aisle of this church. Messrs. A. & W. H. O'Conner, of London, were the artists. The entire design, which is of four lights, symbolizes the one thought of the Resurrection; and the subjects are:—1. The Setting of the Seal upon the Sepulchre, after our Lord was placed in the Tomb; 2. The risen Saviour appearing to St. Mary Magdalen in the Garden; 3. Our Lord walks with his two Disciples to Emmaus; and 4. Our Lord shows Himself to His Apostles before His Ascension. These subjects are enclosed in ornamental framing, bearing half-figures of the four greater Prophets and their emblems, and the half-figures above of the four Evangelists and their emblems. In the tracery is seen the Saviour risen, with Angels in adoration.

St. Olive's, York.—A stained-glass window, the gift of Mrs. Dixon, of York, has been erected on the south side of this church. The subject is the Ascension of our Lord; and the work is from the studio of Mr. J. W. Knowles, of York.

Norton Church, near Sheffield.—The east window of the south chapel of this church has recently been fitted with stained glass. The subject in the centre is the "Ecce Homo." The panel is placed on a coloured ground, relieved by the passion-flowers and vine ornamentation, with the initial medallions and arms of the Cammell family introduced. Two south aisle windows, erected by Mr. Chas. Cammell, of Norton Hall, have also been filled by the same artist, Mr. T. W. Camm, of Smethwick, near Birmingham.

St. Thomas's, Dudley.—A memorial window has recently been erected in the south aisle of this church. The subject is the Ascension of our Lord, which occupies three of the five lights. The window glass was executed by Mr. T. W. Camm, of Smethwick, near Birmingham, who is also entrusted with the Guest Memorial for St. Edmund's Church, Dudley.

Tamworth Church.—The general committee have accepted the design sent in by Mr. Wailes, of Newcastle, for a testimonial window to Dr. Millar. The design consists of the figures of the twelve Apostles, bearing appropriate symbols. Above and below are angels bearing scrolls. The glass for the painted window will cost 270*l.*, and the necessary repairs to the stonework of the window, and other expenses, about 80*l.* We may also state that a painted window, which will cost about 150*l.*, is to be placed in the south transept, to the memory of the late Rev. F. Blick, for about forty years vicar of the parish. This church is now undergoing internal restoration, and, it is hoped, will be enriched with other stained windows.

Nayland Church.—This church has just been adorned by a new east window, the work of Mr. H. Baker, of Colchester, which has been filled with painted glass, by Messrs. Baillie & Mayer, of London. The window is of the Decorated period, and contains five lower compartments, with tracery lights. In the centre opening are two groups under canopies, one of which is "The Trial of St. Stephen," and the other "The Stoning of St. Stephen." The four side openings each contain a group in medallion-shape on geometrical and mosaic back-grounds, enclosed within borders of purple and green flowers. The groups on the north side are "The Nativity," and "Christ bearing the Cross;" on the left side "The Entombment," and "The Ascension." In addition to this window, a new stone step to the communion-table, with encaustic tiles, has been laid, and the walls have been re-stuccoed.

St. Edmund's, Salisbury.—Three windows in the south chancel aisle of this church have been filled with stained glass, the gift of the Rev. T. H. Tooke, formerly rector of the parish. The work has been executed by Messrs. Clayton & Bell, of London. The glass represents scenes in the life of Jesus, illustrating incidents of childhood; the aisle having been built for the use of Sunday-school children.

St. Mary's, Bloxham.—The new east window in the chancel of this church, the work of Messrs. Morris & Co., London, was not finished till late on Christmas Eve. In the large quatrefoil at the top of the window is a figure of our Lord, as the King of Glory, seated on a rainbow, surrounded by the angelic host, some of whom are holding a screen of curtains behind him. Immediately below, on a deep blue ground, is a seraph with six wings, of a rather dull ruby. On the north and south sides respectively are angels with bright ruby wings, holding in their hands the sun and the moon. Below these are four angels with white wings on a blue ground like the rest, two playing on stringed instruments, one on pipes, and the remaining one singing from a scroll of music; ornaments in yellow stain are on all the draperies. In the cusps of the lower lights, dividing the tracery from the lower part of the window, are the four gates of the Celestial City, the New Jerusalem, with an angel over each gate. The walls are alike all round, and the dome in the centre, but variety is obtained in the grouping of the buildings, turrets, and trees. The four lights in the lower part of the window are divided half-way down, thus making eight compartments, each of which is occupied by two figures of angels, archangels, apostles, and prophets in the upper half, and martyrs, kings, bishops, and virgins in the lower. This is a memorial window to some members of the Davis family. The cost of the window has exceeded 350*l.*, and has been defrayed out of the donation of 1,000*l.* presented to the church last year by Mr. John Hale, of Germans, Chesham, whose wife is a member of the Davis family.

The Northern Architectural Students' Society.—On the 15th the members of this society held their annual fortnightly meeting. Mr. W. L. Newcombe, president, occupied the chair. Mr. Joseph Oswald read a paper upon "Domestic Architecture," with special reference to villa and suburban residences. The discussion which followed was introduced by Mr. J. H. Morton and the chairman.

Books Received.

Ernest George's Sketches, German and Swiss. London: W. M. Thompson, Pall-mall, 1870.

HAVING completed a number of water-colour drawings during a sketching tour, the artist, an architect, made pen-and-ink sketches from them, and, with the aid of Cowell's anastatic process, now publishes actual transfers of them, forty-five in number, with brief descriptions. The views taken are in Aix-la-Chapelle, Nuremberg, Cologne, Würzburg, Coblentz, Prague, Bâle, Lucerne, Thunne, Berne, Lausanne, Chillon, and elsewhere; and if not particularly novel, are very picturesque and pleasing. Mr. George is evidently a ready sketcher, and has a good eye for the choice of a point of view. The sketches are too slight, but they make a pretty table-book, which will serve to illustrate and recall the German journey of many an ordinary tourist, and suggest to others how interesting they would find a similar trip.

English Country Houses: Forty-five Views and Plans of recently-erected Mansions, Private Residences, Parsonage Houses, &c.; with a Practical Treatise on House Building. By WILLIAM WILKINSON, Architect. London and Oxford: James Parker & Co. 1870.

THE object the author had in view in putting together these forty-five examples of Domestic Architecture was, he says, chiefly to assist those who may propose to build in determining the style and character of the proposed edifice, in deciding upon the materials to be employed, and the mode of executing the work, and as suggestive of various matters that deserve consideration. The buildings here represented, and which have all been executed from the designs of the author, range from residences costing 5,000*l.* or 6,000*l.* each, to cottages 300*l.* the pair. Plans accompany each view, and some sensible and useful suggestions for persons not within reach of an architect, precede the illustrations. The elevations, though they have a strong family likeness, present considerable diversities, and serve to show how many combinations may be produced with a few gables, flat copings, moulded chimney-shafts, and mullioned windows.

A valuable feature of the book is that the actual cost of the majority of the buildings is given, together with what is found to be the price per foot cube, the cubical contents being calculated from midway between the floor line and the bottom of foundation, to midway between the plate and ridge of roofs. Thus Wootton House, Oxfordshire, exclusive of the value of the walling stones, dug on the estate, comes to 5½d. per foot cube; Bignell House, same county, 6d. per foot, the walling stones being dug and the lime burnt on the estate. A residence on Norham Manor, Oxford, walls of local red bricks and freestone dressings, comes out at 6d. per foot cube; and a smaller residence on Walton Manor, 5d. per foot. A farmhouse at Upton, the wall stones being quarried near the site, cost 4½d. per foot; and two other farmhouses and outbuildings, with walling of red bricks, 5d. per foot. The views have been drawn by Mr. J. W. Hallam, and, if a little crude, have the advantage of showing exactly what the architect means, Mr. Hallam being himself an architect.

Miscellanea.

Public Works in India.—In the House of Commons Mr. Kinnaird asked whether the Viceroy of India had issued orders to stop further expenditure on public works, and whether such orders had been approved by the Home Government. Mr. G. Duff said no such orders had been issued. Last autumn the Government of India discovered that it had communicated to the Home Government too sanguine a view of its immediate financial position, and it found it necessary to make reductions in various branches, and among others that known as public works ordinary, meaning works which the Government paid for out of the annual income. Mr. Duff then read an extract from a despatch, from which it appeared that the works to be paid for out of revenue would be four millions and a half; out of sums proposed to be borrowed, three millions and a half; and for railways guaranteed by the Government, two millions; making in all upwards of ten millions.

Water Supply.—The Slough Waterworks have been opened. Owing to want of a proper system of drainage, a want which may also shortly be supplied, the water-supply of Slough has hitherto been contaminated to such an extent as to seriously affect the health of the locality. The resident engineer of the new waterworks is Mr. Edward Secker, under whom the whole of the works have been carried out. The only outward visible sign of the progress of the works has been the erection of a tower at the rear of the Slough Police-station, some 75 ft. in height, with water-tank at the summit, capable of containing 40,000 gallons, which would meet the wants of a much larger town than Slough, as the tank can be pumped full in twenty-five minutes, and the daily consumption would probably be considerably under 100,000 gallons. The water is, of course, at high pressure, and in case of fire it could easily be thrown over the highest building in Slough. The water is soft and pure. The cost of the works has been about 14,000*l.*, including the mains, which have already been laid throughout the town. The well from which the water is drawn has been sunk into the chalk formation 114 ft. below the surface. Some of the sinking work was done by a diver 55 ft. under water.——The Liverpool Water Committee, after hearing a report from their engineer, have decided that in future the supply of water shall be limited to ten hours daily, by which it is expected that a large annual saving will be effected.

Oxford Architectural Society.—The members of this society have, during the present term, made a series of excursions to various places of interest in the neighbourhood of Oxford; and on Saturday last a party of nearly fifty in number walked to Wytham, where they were hospitably received by the Rev. H. O. Coxe, who conducted them over the church, &c. They then proceeded to the site where British remains have lately been discovered and where the different graves, pits, &c., were pointed out by Dr. Rolleston, who explained the circumstances attending these discoveries. The party then proceeded, by the ruins of Godstow Nunnery, to Woolvercott. An evening meeting of the society was held in the Taylor Building, on Tuesday last, when Professor Westwood gave an account of some Russian ecclesiological objects, which he exhibited, and Mr. R. F. Bigg-Wither, M.A., read a paper "On Iconography in Russia," in which he developed the history of the rise of the various schools of sacred art in that country, illustrated by a number of icons, Russo-Greek crosses, and various forms of the portable iconostagis, photographs of vestments, coloured and photographic views of the exterior and interior of remarkable churches and icons.

Southampton Workhouse.—The proverbial white elephant of Siam could scarcely have been more troublesome to the king of that country than the new Poorhouse has been to the ratepayers of Southampton, says the local *Independent*. First, there was a contest whether there was a necessity for a new building. Then there was a sharp war as to whether the old circumscribed site should be retained. Then a contest, issuing in law, ensued as to who should be the architect. A second architect having been fixed upon, and the first compensated for his disappointment, the services of more lawyers were needed upon the point whether the builders were liable under their contract to do certain work, and it was decided by arbitration that they were *not* so liable. At last, through much tribulation, the building is obtained; but, behold, before it is paid for, we are gravely informed by the Commissioners in Lunacy that, despite all the approvals and disapprovals of the Poor-law Board, the lunatic wards are unfortunately placed and badly arranged, the yards attached being very small, and quite inadequate for the purposes of exercise, and not capable of enlargement.

Proposed Public Park at Sheffield.—The town trustees of Sheffield have under consideration a scheme for the provision of a public park, the funds for the establishment of which shall be derived from the large sum of money left to the town by the late Mr. Samuel Bailey. It is expected that the amount of Mr. Bailey's bequest will reach about 110,000*l.* at least, and of this it is proposed to spend 30,000*l.* on the purchase and endowment of a considerable portion of land belonging to the Sheffield Water Company, and situate close by their supply reservoirs, just outside the town, in a very pleasant and convenient neighbourhood.

The New National Gallery.—In the House of Lords Viscount Hardinge, in moving for a copy of the correspondence between the Office of Works and the architect respecting the designs of the new building, said he had heard a report that Mr. Ayrton had *congé'd* Mr. Barry, and that he was contemplating a re-arrangement of the existing building. He trusted no attempt would be made to patch up or tinker the existing edifice. Earl Granville believed that the Chief Commissioner of Works only intended to make a few minor alterations. The Earl of Kimberley said he thought it unlikely that there would be any objection to lay the correspondence on the table when it was completed. Lord Redesdale hoped that before pulling down any more buildings the Government would cover those sites which had already been cleared. As far as he could learn, very little progress was making with the new Public Offices. Earl Granville said that the Government at present occupied a great number of houses in the best parts of London; but that plan was both costly and inconvenient.

The New Abattoirs for Bradford.—The slaughter-houses about to be erected by the Bradford Corporation, and the works for which have been let, will stand at the north-west corner of the ground now being laid out as a cattle-market, near Leeds-road. The architects are Messrs. Lockwood & Mawson. The general plan embodies the principle of sections, each complete in itself, each of good working size, and containing all the appliances and requisites of the trade, while affording such suitable accommodation as will ensure humane treatment for the animals to be slaughtered. Each section will be 28 ft. in width, and will run from north to south. Entrances for cattle are provided in Egbert-street and Carroll-street. The arrangements may be doubled by the erection of a corresponding building on the east side of Carroll-street. The estimated cost of the four sections now about to be erected was 6,600*l.*, but the tenders have been let for 6,143*l.*

Hungerford.—It is finally settled to have a new Corn Exchange and Town-hall, and the old one will come down. A committee has been formed to obtain subscriptions, and Mr. Speenhamland has subscribed 500*l.* Other sums have been promised or subscribed. The exchange will be built by shares. The new buildings are to cost 2,500*l.* It is intended to raise as much as possible by subscription, and to borrow the remainder, the feoffees making themselves responsible for the money borrowed. Architects have been requested to send in plans for the approval of the committee.——A vote of 1,000*l.* has been accorded at the meeting of the shareholders of the Great Western Railway Company, for the erection of a new station at Hungerford. And at the same time a vote of 5,000*l.* for new sidings at Swindon station, and of 4,212*l.* for carriage sheds at Swindon, was granted.

Public Buildings in London.—The Council of the Society of Arts have appointed a committee to confer with the Chief Commissioner of Public Works, the Lord Mayor of London, and the Chairman of the Metropolitan Board of Works, with the view of establishing such harmonious action between the several authorities they represent, as may prevent the creation of public or quasi-public buildings which shall disfigure the metropolis.——Lord Elcho, in the House of Commons, has given notice that on going into committee of supply on the Civil Service estimates, he will move a resolution in accordance with the recommendation of the select committee of last year as to new public buildings in the metropolis, and requiring the deposit of plans and elevations, models and designs, at the office of the Commissioner of Works, in the same manner as railway companies are now compelled to deposit with the Board of Trade, and to move the necessary alterations in the standing orders.

Superiority of Ancient Architecture.—That was a triumphant appeal of an Irishman, a lover of antiquity, who, in urging the superiority of the old architecture over the new, said,—"Where will you find any modern building that has lasted so long as the ancient?" And it is not such a bull as it looks.

Carlisle Bridge, Dublin.—We are glad to learn that there is now a fair prospect of the corporation taking up Mr. Geoghegan's admirable plan for the widening of Carlisle Bridge, and of thus conferring, at a trifling expense, a most valuable boon, to the citizens of Dublin.

Railway Sleeping Carriages.—Mr. Howlison, of Glasgow, proposes to make use of the *existing* compartments of railway-carriages, his arrangement permitting them to be used either for sitting or sleeping, at the will of the passengers. Unless when used for sleeping, the compartments will present almost exactly their present appearance, and the sleeping arrangement will consist, in first-class carriages of one shelf, in second-class carriages of two shelves, placed at equal distances above the present seats, of equal breadth with them, and extending in the same direction. The arrangement is, in short, similar to that of berths in ships; and the railway berths may be made equally, if not more, commodious. Under this system a first-class compartment could hold only four, and a second-class six, passengers.

Projected Cathedral in Liverpool.—The proposal to erect a cathedral in Liverpool has just been revived there. At the select vestry, the chairman, Mr. Churchwarden Turner said:—If the rector would waive his claim to 5,500*l.*, now in Chancery, it was the intention of himself and his colleagues to propose at the next Easter vestry that the money be kept as a sort of nucleus of a fund for building a new parish church on the site of St. Peter's, and he had no doubt that the wealthy people of Liverpool would come out handsomely, and that they should have a church worthy of the town. He believed a movement was on foot to separate Liverpool from the diocese of Chester, and if it was successful they should have a Bishop of Liverpool as well as a bishop in Liverpool.

The New Church of St. Mark, Leicester. The tender of Messrs. Osborne, Brothers, masons and builders, Leicester, having been accepted for the completion of the works connected with the building of the new church of St. Mark, in Belgrave-gate, they will be commenced forthwith. It is expected that the ceremony of laying the memorial stone of this church, and also that of St. Paul, now in the course of erection on the Dane Hills, by the same contractors, will be performed in a short period on the same day, by the Bishop of Peterborough. The contract for St. Mark's Church is about 11,000*l.*, and that for St. Paul's about 4,500*l.* The funds being somewhat low for carrying out the architect's design for the latter-mentioned church, the erection of the spire is not included in the contract. The two churches when complete will afford sittings for upwards of 1,600 persons.

An Extensive Foundry.—The block of buildings recently erected on the banks of the river at Bedford, and adjoining the Britannia Works, has been opened. Owing to the growth of Messrs. Howard's business, they were for a long time unable to produce a sufficient quantity of castings. They therefore determined to devote the present large foundry to the fitting and wrought-iron department, and to erect a new foundry on a much larger scale by the side of the old one. There are 35,000 square feet on the ground floor. There are four cupolas or furnaces capable of melting 300 tons per week and which are expected to be very shortly in full work. The internal and general arrangements were planned by Mr. James Howard, M.P., the erection being under the direction of Mr. Usher, architect, Bedford.

The Sewage of Dumfries.—An application has been made by a London company to the town council of Dumfries, through Provost Harkness, for a concession of the sewage of the town for conversion into manure. The proposal is that, so soon as the new sewerage is completed, the whole sewage of the town be conceded to the company for thirty years, on the following conditions:—That the sewage be treated by the process of the Native Guano Company; that the town receive 5 per cent. of the profits in the event of the experiment proving successful; and that if unsuccessful within six months after commencing the said process, the agreement cease and determine. The matter has been remitted to a committee.

Monumental.—The commission for the Faraday memorial statue to be erected in the hall of the British Museum, has been placed in the hands of Mr. Foley.——The proposed memorial over the remains of Daniel De Foe, to be placed in Bunhill-fields burial-ground, will be of marble, and the memento itself will be 3 ft. square at the base, tapering to a height of 15 ft. It is being executed by Mr. Horner, the sculptor, and will be ready for fixture in May.

Building Speculations.—The case of Mr. Daniel Tidy came before the New Bankruptcy Court on Thursday. This was an application to pass the last examination. The bankrupt had filed his accounts, and there was no opposition. The accounts showed liabilities to secured creditors, 341,136*l.* 1s. 6d.; to unsecured creditors, 20,578*l.* 7s. The surplus on secured property was estimated at 267,000*l.*, consisting of finished and unfinished houses, all of a very large class; but the mortgagees, with the fact before them that it would cost thousands of pounds to complete the buildings, did not consider their security to be of more value than the amounts lent. The available assets consist of 2,200*l.*, and 500*l.* mortgage on fixtures. No opposition being offered, the bankrupt was allowed to pass.

Increased Value of Property near Sheffield.—An application has been made before Vice-Chancellor Malins to effect the sale of the lease of the Grange Villa Estate, Ecclesall, situate near the Chesterfield and Sheffield Railway, and now being administered in Chancery. It was stated that the property consisted of fifty acres of agricultural land, from which the owners got 180*l.* per annum; but since the new railway had been made, its value had increased as building land to 1,500*l.* per annum, the lease, according to the custom of Sheffield, being for 800 years. Affidavits were read in support of this statement; and the Vice-Chancellor sanctioned the petition for leasing the land accordingly.

Sewage Irrigation in India.—We hear that a sewage farm has been established in the vicinity of Madras. The total area is thirty-seven acres, but about two acres only have been put under cultivation. Various crops have been tried on the sewaged area. Guinea grass succeeds so well that its yield is at the rate of eighty-eight tons of fresh grass, or twenty-nine tons of hay per acre. The value is 58*l.* per acre. The report states that the results to health have been satisfactory, and that one great source of disease has been removed.

Hull.—Proposed New Bridge over the River Hull.—At a recent meeting of the works committee, a sub-committee's report was adopted, recommending the carrying out of a plan by the board's surveyor for a new bridge over the river Hull, between Sculcoates and Groves districts, at a probable cost of 8,700*l.* The surveyor was instructed to obtain offers for the land required to form the approaches, and the Parliamentary committee were asked to prepare the necessary Parliamentary notices, subject to confirmation by the board.

Progress of the New Lunatic Asylum, Hereford.—At the county sessions, the committee of visiting justices have reported that they have inspected the works in company with the architect; and have found that they are being carried on by the contractor, Mr. J. Clutterbuck, in a most satisfactory manner. The architect has been instructed to prepare a plan and estimate for a gasometer; and fifty acres of adjoining ground have been purchased.

A Church to be Built by the Dowager Marchioness of Westminster.—The foundation-stone of a new church has been laid at Hindon, Wilts, by Lady Theodora Grosvenor, youngest sister of the Marquis of Westminster. The building will cost about 4,000*l.*, and the entire cost will be borne by the Dowager Marchioness of Westminster. Mr. T. H. Wyatt, of London, is the architect; and Mr. Mills, of Shaftesbury, the builder.

Fever in the Metropolis.—Fever has broken out in several of the pauper establishments in the metropolis. At the school recently built at Highgate, several children have died, owing, it is thought by the medical men, from overcrowding.

A School of Art for Belfast.—At a preliminary meeting held in the Royal Academical Institution, Belfast, it has been resolved to establish a School of Art in this town, and a provisional committee has been formed. A general meeting is to be convened.

The South Metropolitan Tramway.—The new line of tramroad from Brixton Church to the old toll-gate at Kennington is now nearly completed; some few yards at either end require paving, and the line to be swept, and the metals will be ready for traffic.

New Buildings at South Kensington Museum.—A model, showing the proposed mode of completing the buildings for the South Kensington Museum, has been deposited in the library of the House of Commons for general inspection.

The Fen Drainage.—The Drainage of the Middle Level district of the Fens has been effected satisfactorily during the winter, the syphons and works continuing in an efficient condition.

TENDERS.

For completing two houses at Lavender-hill, Wandsworth-road, for Mr. Edward I'Anson:—

M'Lachlan	£328 0 0
Lathey Brothers	323 0 0
Martin	307 0 0

For new schools, Seasalter, Whitstable. Mr. J. Clarke, architect:—

Cornelius	£538 0 0
Porter	537 0 0
Harnett	520 0 0
Foad	502 0 0
Lawson, jun.	495 0 0

For footbridge over London and North Western Railway, from Shendish Park, exclusive of ironwork. Mr. J. Clarke, architect:—

Roberts	£495 0 0
Bell & Sons	455 0 0
Dunkley, including iron girders	511 0 0

For the completion of the works (the foundations have been put in by Mr. Firn) connected with the erection of the Church of St. Mark, Leicester. Mr. E. Christian, architect. Quantities furnished:—

Williams	£16,750 0 0
Halliday & Cave	13,989 0 0
Griffiths	13,278 0 0
Jackson & Shaw	12,400 0 0
Taylor	12,070 7 0
Firn	11,798 0 0
Law & Son	11,750 0 0
Osborn Brothers*	11,346 0 0

* Accepted, subject to certain modifications in the specification and the estimate.

For alterations to 144, Edgware-road, for Mr. W. Kencke. Mr. W. Seckham Witherington, architect:—

Melville	£375 0 0
Mark	320 0 0

Accepted for the hospital at Skinningrove, for the Earl of Zetland. Mr. John Ross, architect:—

Bosomworth	£1,341 6 0

For villa for Mr. C. Janson, Darlington. Mr. John Ross, architect:—

Brick, Stone, Plaster, and Slate Work.

Simpson	£751 15 0

Carpenter and Joiner's Work.

Martin	360 0 0

Plumbing and Glazing.

Johnson	200 2 0

Painting.

Davison & Son	18 0 0

Accepted for two villas, Whitby, for Mr. Benjamin Pearson. Mr. John Ross, architect:—

White	£2,288 10 0

For farm buildings and cottages at Morton Carr Farm, for Mr. J. W. Pease, M.P. Mr. John Ross, architect:—

Brick, Stone, Plaster, Slate, and Joiner's Work.

John Johnson	£522 15 0

Plumbing and Glazing.

Thomas Johnson	28 12 0

Painting.

Hornby & Roberts	12 0 0

For the first section of a new church at Brightridge, Kent. Mr. Theodore K. Green, architect:—

		Extra Boarding to roof.	Extra Plastering to roof.
Myers & Sons	£2,194	£78	£85
Sharpington & Cole	1,877	97	82
Walker	1,857	57	82
Anscomb	1,730	80	90
Dove Brothers	1,755	45	75
Willicombe & Oakley (accepted)	1,595	65	97

For Bow Presbyterian Church. Mr. Alexander Peebles, architect:—

		Extra for Stone Spire.
Barnett	£6,638	£161
Bishop	5,483	370
Hill, Keddell, & Waldram	5,466	530
Fish	5,289	243
Mortar	5,269	489
Patman & Fotheringham	5,250	275
Adamson & Sons	5,243	321
Sawyer	5,221	372
Hill & Son	5,220	310
Myers & Sons	5,199	280
Dove Brothers	5,155	250
Eunor	5,147	442
Hume	5,058	284
Manley & Rogers	5,021	280
Nightingale	4,946	350

For finishing hotel and pair of cottages at Aldershott. Mr. Henry Peak, architect:—

Martin, Wells, & Batchelor (accepted)	£539 16 0

For stabling, &c., to Mr. Holland's new house at Farncombe, Surrey. Mr. Henry Peak, architect:—

Goddard & Son (accepted)	£315 0 0

For stabling, &c., at Farncombe, Surrey, for Mr. G. J. Hull. Mr. Henry Peak, architect:—

Mitchell	£313 0 0
Atfield	288 0 0
Nye	251 10 0
Moon & Son (accepted)	227 10 0

For building two houses and shops on Station-hill, Basingstoke, for Mr. H. Smith. Mr. G. B. Mussellwhite, architect:—

Wilkes	£892 0 0
Pelham & Tigwell	850 0 0
Jennings	812 0 0
Pistell	780 0 0
Mussellwhite & Son (accepted)	769 19 6

For alterations to house, 11, Grafton-street, W. Mr. Henry T. Gordon, architect:—

Tavenor	£887 0 0
Bowman (accepted)	767 0 0

For forming and draining new roads, Bevois Town, Southampton. Mr. James Lemon, borough surveyor:—

Sibsey	£308 13 11
Bull & Sons	307 0 0
Cox (accepted)	225 0 0

For an iron shed and an office at the New Cattle Market, Southampton. Mr. James Lemon, borough surveyor:—

Stone & Grace	£237 0 0
Stevens	229 0 0
Lankester & Son	219 0 0
Martin & Son	214 0 0
Sanders	208 0 0
Bull & Sons	195 0 0
Sibsey	188 12 6
Pearce	185 0 0
Crook (accepted)	184 10 0

For the new School of Art in connexion with the Hartley Institute, Southampton. Mr. James Lemon, architect:—

Taylor	£1,500 14 6½
Norman & Co.	1,352 10 0
Barnes	1,300 0 0
Bostock	1,271 0 0
Ward	1,250 0 0
Brinton & Bone	1,250 0 0
Philps	1,237 17 1
Sanders	1,225 0 0
Sibsey	1,200 0 0
Crook	1,190 0 0
Laver & Rowland	1,174 0 0
R. & C. Light	1,150 0 0
Pearce	1,140 0 0
Quick	1,125 0 0
Stevens	1,119 0 0
Martin & Son	1,695 0 0
Gambling	1,050 0 0
Bull & Sons (accepted)	1,049 0 0
Smith	1,034 0 0

For alterations to offices, John-street, B'ackfriars, for St. Saviour's Union. Messrs. Henry Jarvis & Son, architects:—

Deards	£296 0 0
Marsland & Son	294 0 0
Tarrant	270 0 0
Baguley	233 0 0

For alterations to Southwark Chapel, Long-lane, Bermondsey. Messrs. Henry Jarvis & Son, architects:—

Higgs	£1,077 0 0!
Thompson	973 0 0
Henshaw	872 0 0
Wicks, Bangs, & Co.	745 0 0
Tarrant	734 0 0
Rider & Son	556 0 0
Downs	536 0 0!

For the erection of Christ Church Boys' National School, Rotherhite, Surrey. Mr. James Clench, architect. Quantities not supplied:—

Lidstone & Son	£1,088 0 0
Emery & Co.	1,050 0 0
Deavin	987 0 0
Stevens	975 0 0
Sawyer	953 0 0
Pitcher	939 0 0
Rivett	933 0 0
Nightingale	922 0 0
Blake	888 0 0
Machin	882 14 6
Lammie & Co.	858 0 0
Harrison & Edwards	845 0 0
Winship	840 0 0
Stone	828 0 0
Shirly & Horne	808 0 0
Beevors	790 0 0
Wright	775 15 0
Kent	775 0 0
Ladd	745 0 0
Daniel	733 5 6
Wilson	730 0 0
Parker	699 0 0
Hughesdon (accepted)	695 0 0
Gardner & Co.	680 0 0
Johns	660 0 0

For sheds at St. Luke's Stone Yard. Mr. H. Saxon Snell, architect:—

Bridgman & Nuthall	£123 0 0
Pask	108 10 0
Sabey & Son	106 0 0
Ebbage	105 0 0
Perry Brothers	103 0 0
Smith (accepted)	95 10 0

For supplying and laying York pavement,' granite kannelling, and other work in the footpaths of Colchester, for the Commissioners under the Colchester Improvement Act. Mr. Joseph Hope, town surveyor :—

Everett & Son	£2,544	10	0
Lynch	2,400	0	0
Rutty	2,165	0	0
Ewens	2,154	3	0
Watts	2,105	9	0
Stroud	2,070	10	6
Nowell & Robson	2,050	0	0
Knight (accepted)	2,013	0	0

TO CORRESPONDENTS.

Casting.—Will one of your readers inform me as to the best manner in which I could take a cast of a small bust of "Victory?" It has a laurel wreath entwined round its brow, and amidst the masses of hair I find it impossible to prevent parts of the wreath and other projections from falling off. The material is of no consequence, so long as it is durable and not too expensive.—B.

Putty.—I wish one of your correspondents would give me in your paper a receipt for making good putty, such as will on a skylight resist rain.—OMEGA.

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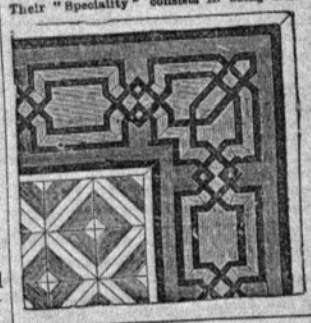

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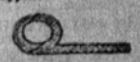

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The Builder.

VOL. XXVIII.—No. 1417.

Our Communication with the Continent.

NO METHOD of bringing a scientific question before the tribunal of enlightened public opinion can be more thoroughly respectable than a lecture at the Royal Institution. Not only may it be regarded as a fair and open challenge to the intellectual chivalry of the day,—a learned tournament, graced with the presence of "store of ladies, whose bright eyes rain influence," if they do not "judge the prize";—but it may further be taken as evidence that the lecturer has so far made out a *primâ facie* claim to respect as to have been awarded the privilege of occupying one of the most select of the theatres of Science. His bill has passed the grand jury of the Institution; and he comes forward, not to open the pleadings, but to speak to evidence, and to claim a verdict.

The lecturer, however, does not hold a position of unequivocal advantage. He shares the dangerous temporary immunity of the preacher. He is not exposed to the cross-fire of debate. He thus becomes liable to a temptation, which frequently proves irresistible, to rely on what is telling, rather than on what is true. Safe from any oral criticism, he may presume too much on a security which proves delusive when his arguments are reviewed with the impartial investigation of leisurely criticism. The applauses of the theatre of the Institution are at once more transient, and of far less substantial value, than the deliberate assent of the scientific press.

We make these remarks with the intention of conceding to Mr. Bateman the largest tribute of respect that is consistent with a mature conviction of the entire impracticability of his scheme for crossing the Straits of Dover by means of a built iron tube laid on the floor of the Channel. That he has given much attention to the subject, that ingenuity of a high order has been displayed, that many obstacles have been foreseen, and, to a great extent, grappled with,—all this we fully admit; but as to the substantial merit of the scheme, we are compelled to come to the conclusion, not merely that it is not proven, but that the result of the trial can only be a non-suit.

Stimulated, most probably, by the unexpected and very gratifying success of Mr. Barlow's miniature subway under the Thames, more than one engineer of skill and of more or less experience has turned his attention, during the present slack tide of professional occupation, to a revision of the various schemes for bridging the Straits of Dover.

With regard to one of these schemes, which, during the past year, was put forward as a sort of forlorn hope, we fear that we must plead guilty to the charge of having exploded the magazine. To our first examination of the subject, in the *Builder* of September 18th, 1869, the engineer replied in a letter to the *Times*, which laid him open to so complete a sifting of the subject, in our number for September 25th, 1869, that the scheme seems to have faded from the public mind, and made its way to that limbo which is peopled by the innumerable ghosts of still-born inventions.

We hold the present state of our communication with the Continent of Europe to partake of the nature of a scandal, both to our scientific acquirements and to our commercial energy. Men fully acquainted with the engineering of America consider that so imperfect a mode of intercourse would not be endured for six months by the active and foreseeing race which has so recently bridged the desert with an iron roadway. And, regarding our own experience alone, it is inexplicable why the sixty-four miles' passage from Holyhead to Dublin should have attracted so much more successful scientific effort, and should, at the present moment, be in a state so much more worthy of a great postal line of communication, than the twenty-two to twenty-six miles of water-way between Dover harbour and Cape Grisnez.

Numerous projects, more or less serious in their form, have been suggested from time to time for the improvement of our communication with France. A French engineer, M. Mathieu, submitted a plan for a tunnel to Napoleon Buonaparte, when first consul. In 1856 a scheme was formed for the piercing of a tunnel, to be worked from shafts opened in thirteen artificial islands, with which it was proposed to encumber the Channel. Mr. Low proposed, and Mr. Hawkshaw supported, a scheme for a tunnel through the grey or lower chalk, from a spot half a mile west of the high light of the South Foreland, to one about four miles west of Calais. The upper surface of the grey chalk is about 175 ft. below high water on the English coast, and about 100 ft. lower on the French shore. The sub-marine distance of the line selected was to be about twenty-two miles, without any intermediate shaft.

Mr. Remington, in 1865, published a yet more formidable plan. With the view of avoiding the danger of faults and springs in the chalk, he proposed to pierce the Wealden beds lying between Dungeness and Cape Grisnez. The length actually beneath the water, according to his idea, would be 26 miles, but it was contemplated that an intermediate or insular shaft should be put down on the shoal or submerged island, called the Ridge. The cross section of this tunnel was to be 25 ft. by 30 ft. The above-named schemes for what may properly be termed tunnelling the Channel are the only two in which any serious degree of attention has been paid to the geological indications which science can as yet grasp; and the conclusions arrived at are, as will be observed, contradictory.

With the aim of avoiding on the one hand the practical mining dangers natural to operations in the chalk below the sea, and of shunning on the other hand the increased cost, both of depth and of length, involved by attempting to follow the level of the Wealden, suggestions have from time to time been thrown out for the fabrication of a metallic tube, either of wrought or of cast iron, or of iron lined with brickwork.

A curious instance of the freaks which fancy will play, even in the case of men by no means unacquainted with the practical manipulation of iron, is afforded by a little pamphlet on an "International Floating Tunnel," which was published last year by Mr. E. W. Young. A tube of boiler plate, ¾ in. thick, "lined outside" (it would seem that the projector is an Irishman) with a layer of concrete 1 ft. 6 in. thick, and "furnished with ribs encircling it at every 6 ft. in length," in order to "give stiffness, and serve to prevent the concrete from breaking away," was to be formed "in short sections of, say, from 200 ft. to 300 ft. in length." These were to be floated into position, and lowered "into place at a certain depth below the surface of the water, where, the joints being made good by divers, they would form one continuous tube across the Channel."

"The tube being buoyant, would be held down to the required depth by mooring cables of iron attached to blocks of *béton* of sufficient weight. Its buoyancy would be such that the passage of heavy trains would have no effect upon its position. The tube would be fixed at such a depth below the surface as to be practically unaffected by the waves." It is not clearly stated what resistance it would oppose to the set and run of the great tidal movement. "It could not be raised vertically without lifting the anchors, or breaking the mooring-cables, nor depressed without overcoming its buoyancy. It could not move laterally without breaking away from the inclined mooring-cables, and *therefore* it would be stable under all circumstances."

This wonderful modernisation of the old idea of Mahommed's coffin would have the further advantage that "ventilation would be secured by means of lighthouses placed half a mile apart along the tube. These lighthouses would be supported from the bottom of the sea by piers formed of clusters of cylinders filled with concrete." They would, no doubt, be taken under the special protection of the Admiralty, and would be objects of loving reverence to all those who went down to this part of the sea in ships. They might also be furnished with life-buoys, and the watchmen who tended the lights would be able to communicate freely with one another by an electric telegraph through the tube!

Mr. Young has unfortunately omitted to state how it is that certain objections, which he rightly perceives to be fatal to the schemes of several of his brother projectors, have no force against his own. Thus he tells us, in italics, that a tube if laid at the bottom of the Channel, "in case of accident, could not be repaired." The facility of repairs in the case of a floating tube would scarcely seem to be much greater; while the liability to accident is certainly more obvious in mid-channel than on the bottom of the sea. Again, Mr. Young objects to the extreme difficulty of laying a sub-aqueous tube, because divers cannot work with safety at a depth of above eleven or twelve fathoms, while the Straits are thirty fathoms deep in parts. How the mooring-anchors, or blocks of *béton*, are to be satisfactorily fixed and attached to the tube in those deeper portions of the sea, or indeed how the diving process is to be carried on at all, *en pleine mer*, we are not told. We regret not to have time to linger longer with Mr. Young, as we confess to thinking his company more amusing than that of some of his competitors. He only asks for nine millions and a quarter sterling for 21¼ miles of tube.

While Mr. Young would persuade his tube to float at "a certain depth," Mr. Chalmers would have his to crawl, like a hermit crab, over the floor of the Channel. He proposed, in 1866, to construct two strong iron tubes, cased with timber and lined with brick, from shore to shore on the bottom of the Channel. Three ventilating-shafts were to be provided, one in mid-channel and one about a mile from either shore. The tubes were to be made in 300 ft. or 400 ft. lengths, and united under water. It was the expectation of Mr. Chalmers that the set of the tide would cause such a deposit as to bury his tube when in place, under an embankment 40 ft. high, and from 40 ft. to 120 ft. below low-water level.

Mr. Chalmers only asked for three years of time, and for twelve millions of money.

Mr. Marsden proposed, in April last (probably on the first day of that month), a somewhat similar scheme. He gave up, however, the idea of marine shafts, and contemplated ventilation by means of air-pumps. He also proposed to form a trough at the bottom of the Channel, by the agency of divers, and to puddle the same with clay, for the more comfortable bedding of the tube. Mr. Marsden's plan would, no doubt, present many advantages, if he could hit upon a convenient method of pumping the Channel dry during the laying and puddling of his tube; an operation which can hardly be supposed to be covered by the exact and modest estimate of 12,260,000*l*.

Mr. Bateman, realising the immense practical difficulties attendant on submarine work in the open sea, and at depths involving a pressure of six atmospheres, has proposed the construction of a tube which shall be elongated and fixed entirely from within. It is this project to which we refer as having been recently brought forward at the Royal Institution.

The colleague of Mr. Bateman in this scheme, and the projector of the method which it proposes to adopt, is M. Julian J. Révy, an Austrian engineer. The original idea of Sir M. I. Brunel, that of an iron shield, under the protection of which the main work of the tunnel should be carried on, is adopted by these engineers under the name of a "bell." This bell is a chamber of cast iron, 8 in. thick, 80 ft. long, and 18 ft. in internal diameter. The interior of this bell is to be bored true, like a steam cylinder. A smaller tube, 4 in. thick, and 13 ft. in clear internal diameter, is to be built together in segments within this shield.. External flanges on this permanent tube are to be constructed so as to fit with air-tight accuracy in the interior of the bell. These diaphragms will be at such distance apart that always three, and occasionally four, will be contained within the 80 ft. chamber. As each ring is completed, the shield is to be pushed ahead by means of hydraulic presses. It is estimated that the resistance will average about 1,500 tons, and that the propulsive force will amount to 4,000 tons. Thus the bell is expected to slide over the other closely-fitting diaphragms, and length after length is to be fitted, under protection of the movable chamber, till the whole width of the Channel is crept under by an impervious tube.

It is proposed to work the hydraulic machinery at the face from accumulators on shore. Fresh air is to be supplied to the workmen by steam-pumping apparatus, also fixed on the shore. As to the mechanical difficulty of transmitting either hydraulic or pneumatic pressure for a distance of twenty miles through a series of pipes, laid within the one permanent 13-ft. tube, through which the workmen will have to be carried backwards and forwards, and the water accumulating from condensation and from leakage must be carried off,—it is obvious that we have little or no experience to guide us. The maintenance of a constant strain of such formidable magnitude, transmitted through a series of jointed pipes gradually increasing in length to the whole distance, is a dynamical problem as to the solution of which we may be said to be entirely without precedent. The mere statement of the conditions is alarming.

It is the less necessary, however, to enter into the details of a discussion which is altogether beyond the limits of practice,—as far, at all events, as the past and the present are concerned,—because there is one simple consideration which, to any prudent man, is wholly conclusive on the subject. Let us admit that Mr. Bateman could succeed, for eight millions of money, in pushing forward his blind bell over all intervening obstacles. Let us suppose that each of the 11,000 annular diaphragms performs faithfully its allotted work, allowing the well-bored chamber to slide steadily forward, and to leave behind it joint after joint in perfect order. Let us admit that each of the same number of stuffing-boxes is equally perfect in its fitting, and that the screw piles which pass through each go down with a will, and nail the lengthening tunnel, joint after joint, firmly to the bottom of the Channel. Let us suppose that the hydraulic mains and junctions hold their own; that the pneumatic apparatus works at fifteen or twenty miles' distance from the shore as well as at the end of so many hundred feet; that all goes forward like a dream; and that the miners come out into open air on French territory. Still there remains the undeniable fact that the whole of this enormous toil lies at every moment, and will lie at every moment, at the mercy of a few barrels of gunpowder. A torpedo of explosive power sufficient to blow to pieces a cast-iron tube of 4 in. thick, could at any moment knock the whole affair on the head! War, mischief, even what people call accident, might at any moment induce the destruction of a portion of the submerged pipe; and with one effectual blast all the work would be rendered useless. Who would find twelve millions of money, or even eight millions of money, in face of such a risk as this?

It is, perhaps, unnecessary, after what we have already said, to enter any further into the question of continuous submarine railway communication with the Continent. We come naturally to the next suggestion—that of a steam ferry. The practicability and the advisability of such an arrangement had been accepted, in our judgment, long before the scheme was broached by Mr. Fowler. That engineer has brought to bear upon it large experience, great shrewdness, and abundance of practical common sense. It would be difficult to select, among living engineers, a more sagacious adviser. But we are far from being prepared to admit that in the drawings and descriptions which have recently been published, we can have the matured scheme of Mr. Fowler, or the satisfactory outcome of the engineering science of the day. We must refer to one or two details to explain our meaning.

The unit of Mr. Fowler's plan, or of any plan for a steam ferry, must be the ferry-boat. The size of this will be the main determining element of the cost of the scheme. Depth and area of basins, length of piers, position and means of access to harbours, all will be modified in conformity with the dimensions of the steamers. Not only will the cost of this part of the system vary with their size, but the cost of every detail of port and harbour will be directly affected by the same condition. The engineer, therefore, has every inducement to make his boats as small as he possibly can while securing satisfactory results.

On the other hand, the one main *desideratum* of the passage is the avoidance of sea sickness. Even speed is a secondary consideration. Looking at the total distance between London and Paris, the saving of half an hour or of an hour in the actual transit of the Channel is by no means a vital point. If the present possible ten hours can be shortened into nine, it would, of course, be desirable to make the improvement; if the cost of so doing were not disproportionate. But whether this saving be effected by land, or by sea, or by greater facility of transhipping, matters little to the passenger. What *does* matter to him is, to avoid the disagreeable effects of finding himself afloat, and to avoid the abominable discomfort of turning out of a snug carriage, exposing himself to the inclemencies of the weather, perhaps in the middle of the night, and scrambling down a wet platform to enter an intolerably-smelling vessel. This is what ninety-nine passengers out of a hundred dread.

Now two methods of effecting this ready and comfortable communication are practicable. One is to build such a class of steamers (somewhat similar to those on the Holyhead station), and to arrange such basins and stages, on either side of the Channel, as shall allow the feeblest and most timid passengers to step, by a few yards of covered way, from the carriage in which they left London, to the deck of the steamer, and from the deck of the steamer to the carriage bound for Paris. A slip roof, to cover both the steamer and the stage, and a hydraulic lift, to give independence of the tide, are the main requisites of this method, and the boats would be most available if built to cut through the water at extreme speed.

The other method, which we do not doubt will one day or another be adopted, is to construct ferry-boats capable of taking a portion of the train on board, so that passengers, for a small extra charge, would have the choice of not leaving the carriage at all. This is the plan contemplated by Mr. Fowler.

In this case, however, we think that speed of passage must to some extent be sacrified to stability and freedom from movement in the vessel. We do not think that a beam of 57 ft., which is the dimension proposed by Mr. Fowler, will be adequate to free the boats from a very unpleasant rolling motion in the Channel. They will have to contend there with a beam-sea. In the more formidable troughs of the Atlantic the rolling of the *Great Eastern*, in spite of her extreme width of 80 ft., was painfully felt, although the pitching motion was almost entirely counteracted by her length of some 680 ft. For a vessel built not to cut through, but to stride over, the waves of the Channel, it would be necessary to allow a height from the water-line to the top of the bulwarks of 24 ft. or 25 ft., and this would seem to involve a beam of upwards of 70 ft. Again, the vessels at present contemplated are shown without keels, or any distinct apparatus for steering. As the double skin of iron is distinctly drawn in section, the flat bottom can hardly be a mere oversight. The large roofs, which are shown as covering the berth of the steamer, form an item of expense which is hardly requisite if the train is to be run on board. We cannot, therefore, avoid the conclusion that the vessels at present proposed are neither one thing nor the other. They are not built to cleave the sea, like an arrow or an auk, as on the Holyhead passage. They are not large enough to glide over the surface of the angry sea, as the *Great Eastern* might do in the Channel, but as even she is too narrow to do in the Atlantic. And as all the details of harbourage must be calculated after the dimensions of the ferry-boats, we are of opinion that the scheme of Mr. Fowler demands much careful revision before we can accord it that approval which we consider that it may ultimately claim.

With regard, then, to the construction of any continuous railway communication with France either over, under, or through the sea, we cannot admit that a serious question has yet arisen.

That from eight to twelve millions of money should be forthcoming in order to attempt the construction of a work which would be hazardous alike in execution, in maintenance, and in operation, is more than improbable. In the present state of the public mind, it is only necessary to refer to some of the most obvious practical objections to such a project. More minute investigation may be deferred until some chance of the grave discussion of the subject shall actually occur.

For the alternative plans of rapid passage-boats, or of steady, nonrolling ferry-boats, there is room for much more discussion. The immediate adoption of the former would not necessarily exclude the subsequent completion of the latter. But the essential point is, that no very large outlay should be encountered until the subject is thoroughly wrought out. If we build rapid passenger-boats, we can always make use of them in one place or another; but if we build large ferry-boats, with piers, basins, stages, and roofs to fit, and then find that they do not give us what we require, we shall waste both our time and our resources. We are far from saying that the province of the civil engineer terminates with the end of a pier; but yet, nautical experience is a distinct branch of knowledge. Steadiness of beam and instant obedience to the helm are qualities more necessary for the Channel ferry than actual speed. We have the means, provided by the large expenditure on the *Great Eastern* and other vessels, of obtaining very definite information on these essential points. It is of great importance that we should avail ourselves of these facilities for actual experiment. Let us first decide on the requisite details of the ferry-boat. Let us put on the station a vessel that, with railway-carriages actually on board, will ply backwards and forwards over the Straits of Dover independently of weather. When we have once done this, the shore part of the communication can be adjusted without risk. No hesitation will be felt as to the providing of the money. The million of passengers that even now annually cross the Channel are enough to pay for a very perfect and costly accommodation; our only fear is, that if we do not fulfil the main requisites of the case in the first instance, the cost will be indefinitely increased. Let us not commence a permanent international work without having our eyes open, and being certain as to what we are about.

Proposed Bridges at Grimsby.—The plans of a proposed scheme of the Grimsby Corporation for connecting old and new Grimsby, which are divided by the railway, by a foot-bridge over the line from Railway-street to New Market-place, and for continuing that line of communication to the corporation estate in the West Marsh, by a bridge for general traffic over the old dock at the Freeport-wharf, have been laid before a full meeting of the council in committee by Mr. Sacré, engineer to the Manchester, Sheffield, and Lincolnshire Railway Company.

AUTOGRAPH DRAWINGS OF THE GREAT MASTERS OF ARCHITECTURE.

THE paper by Professor Donaldson, "On Autograph Drawings of the Great Masters of Architecture, preserved in the Libraries, &c., of Italy and other Countries," lately read at the Institute of Architects, is one of considerable value. We quote portions relating to drawings in England:—

When we notice the grand works executed by the masters of our art, we are anxious to dive into the secret of those inspirations by which their minds were influenced, and to probe the workings of their genius, so as to ascertain by what means their ideas attained the perfection visible in their productions. This is a curious inquiry, and occasionally it may be a valuable and instructive one; for frequently we may mark the gradual development of a thought originally crude, containing the germs of a fine project, progressively worked out in arrangement, proportions, and details, so as to become a creation worthy of its author. This may be the result of one mind, as in St. Paul's, London, where the first idea of Sir Christopher Wren underwent many modifications, as is obvious in his drawings preserved at Oxford and in the Soane Museum. It was the case also of St. Martin's Church, London; for we see in the collection of drawings preserved in the Radcliffe Library, Oxford, the steps by which James Gibbs gradually improved his original, and, one might almost say, ungainly, design, until it assumed the imposing mass which it now presents in Trafalgar-square. Or the final monument may be the production of many successive minds, and the fruit of more than a century and a half, as was the case in St. Peter's at Rome, where the first notion of Bramante's fruitful genius, in 1505, was modified, reduced, and finally enlarged by the genius of Raffaelle, the Sangalli, Baldassare Peruzzi, Michelangelo, Buonarotti, Vignola, Giacomo della Porta, and at length completed, about 1650, by the stupendous circular colonnades of the imaginative Bernini.

LONDON.—The print-room of the British Museum is very rich in illustrations of Greek buildings. It is, however, to be regretted that they are not yet regularly classified and kept together, and that no special proper catalogue exists of them. I had occasion, in 1830, to consult those then possessed by the Museum through Lord Elgin, and gave a list of the drawings in the note to my description of the subterranean chamber at Mycenæ, p. 28 in the fifth or supplementary volume to Stuart's "Athens." Besides those, I now find that important additions have been since made by the Dilettanti Society, and others. There are eighty-one drawings by W. Pars, 1764-1767, twenty-three of the views being mounted on boards, and fifty-eight in a volume; also one volume of sixty-one drawings of sculptures of the Parthenon, tinted in sepia; one volume of the original drawings for the Ionian Antiquities, published by the Dilettanti Society; one volume of copies of the forty-four drawings originally made by Carrey (who died in 1726, aged eighty years), by order of M. Nointel, the French ambassador at the Porte, before the Parthenon on the Acropolis was damaged by the bomb of the Venetians. They are executed in red chalk and black-lead pencil, and are very precious, as showing many exquisite figures of the pediments, which then existed and now are lost. There are also three drawings by Wolfenberg. There is one folio of twelve plans, elevations, and details to a large scale, beautifully made out of the Parthenon and other buildings in the Acropolis and Sicily—I presume by Lusieri, or his assistants; one volume of eighty-four loose sketches by Ittar of Catania, who was employed by Lord Elgin; one box containing thirteen volumes and a parcel of loose sketches of Sir W. Gell, principally in Greece, but also some of other places through which he passed. The views are of towns, ruins, landscapes, inscriptions, mixed up with some few by other hands; one is a very fine sketch by Gropius, the Austrian Consul at Athens, consisting of a group of priests and Greeks in the court of a house. One of the volumes relates to the Alhambra, many of which are by other artists. Sir William Gell was an indefatigable worker; while his architects or companions were employed upon the buildings, he sketched the scenery around or special features, and took the bearings of the prominent elevations of mountains, and bits of walling, &c. Some are in mere outline, others carefully shaded in lines. Although by no means a brilliant artist, he was a very pains-taking exact draughtsman, and employed the camera lucida to a great extent. His vast stores of knowledge were at the service of every traveller and inquirer. *Amice vale!* Among all these drawings there are many containing authentic original matter, which has never been published.

In the department of Oriental antiquities, under the care of Mr. Birch, are six volumes of the fine original drawings of Assyrian antiquities, prepared for Layard's noble work on this subject, by himself, Boutcher, and other artists, exquisitely rendered; and one smaller volume of illustrations, ably drawn by Churchill. In the department of Greek and Roman antiquities are the drawings prepared for Sir C. Fellows's work on Lycia, Caria, and Lydia, by Scharf. Being thus distributed through various departments of the establishment, these precious treasures of art escape the researches of many, however great may be the courtesy of the keepers of these records to show them, *when asked for.*

I owe to the intelligent and kind suggestion of Mr. Wyatt Papworth the knowledge of the fact, that there is a vast mass of very important and valuable drawings, prints, &c., of a topographical and structural character in the book department of the British Meseum, and which I have examined. The titles of the subjects are given in the special "Catalogue of the MS., Maps, Charts, and Plans of the Topographical Drawings of the B. M.," 8vo. London, 1842, 2 vols. They are classified topographically, according to counties, towns, and parishes; but it is to be regretted that there is no index of the names of the artists and draughtsmen, which is indispensable for those whose researches are primarily directed to the persons. London is very richly illustrated, as, *e.g.*, complete series of drawings of Hawksmoor's churches—Limehouse, Bloomsbury, Spitalfields, St. Mary's Woolnoth, and of Flitcroft's St. Giles. There are drawings by T. Sandby, Nash, D. Alexander, architect; and the Rev. Thos. Kerrich, who appears to have been as indefatigable a sketcher as our late lamented hon. member the Rev. Mr. Pettit. And the counties have the like useful records. With a nominal index this catalogue would have its usefulness vastly increased, and it is to be hoped the principal librarian will have that prepared, as it can now be done with little difficulty.

The SOANE MUSEUM, in Lincoln's-inn-fields, has a very fine collection of original architectural drawings of buildings in every country on the globe, and which I have been enabled to examine thoroughly, through the courteous kindness of its curator, Mr. Joseph Bonomi. In fact, there are about one hundred volumes of drawings, besides those contained in portfolios. I shall commence my notice by reference to three volumes of sketches and exquisitely finished drawings in outline, collected for publication by the late Mr. E. Dodwell, the well-known traveller, archæologist, and author. They were presented through the late Sir A. or Lady Crichton to Sir John Soane, in 1834; some bear the date of 1809, and others of 1831. Various of the free-hand sketches seem to have been made by Mr. Dodwell himself, and the rest are by Italian artists employed by him. Most are by the Signor Vespignani, the distinguished architect of the present Pope, and honorary and corresponding member of this Institute. Two of the volumes illustrate Cyclopean walling principally in Italy, and also Etruscan edifices, as tombs, city gates, &c.; and the third has very fine coloured representations of the buildings of Pompeii and the regions about Naples, and in Calabria. After Mr. Dodwell's death, a volume of Cyclopean or Pelasgic remains was published without text; it is now out of print. Those were by another Italian artist, and consist of views only, freely treated, but very accurate. The original drawings of these do not appear. One volume contains illustrations of the Trajan and Antonine columns, with the sculptures drawn and shadowed in sepia, by Caldari, otherwise called Polidoro Caravaggio. One volume of thirty-six drawings of the Theatre Tor di Nona, Rome, by the Cavalière Fontana, with his signature attached to each; and another of drawings of the Coliseum, with plan, elevation, section, and its restoration by Fontana, and design for a chapel and cloister to occupy the whole of the arena. Drawings by Vasari, Panini, Bibiena, and by Fr. Piranesi of temples at Pæstum. Fifty-five volumes of original drawings by the Adams brothers, and the artists employed by them, and containing designs for the Law Courts, Palaces, Houses of Parliament, and other buildings, and particularly for erections on the east side of Lincoln's-inn-fields: some ceilings by Richardson and Manocci, designed or drawn by Italian artists for the Adams, and details of plate, furniture, &c. One volume, by James Gibbs. Several packets of different parts of Somerset House, by Sir W. Chambers. One volume has fine plans, elevations, and sections of Hampton Court, with original designs thereof, attributed to Wren, and drawings of Greenwich Hospital, as originally designed by I. Jones, and enlarged and added to by Wren; and original project for St. Paul's Cathedral, by Sir Christopher Wren, many containing his autograph notes and dimensions. There is also the court order-book of Sir Christopher, with various documents, bills, and accounts, to which his signatures are attached; but whether they are original or copied it is difficult to decide. One volume by Hawksmoor, and one by G. Dance and his father, with miscellaneous drawings of the Mansion House in the City; a volume of J. Thorpe; two volumes by Thomas Sandby; drawings by Tatham and Playfair; also a volume of Mexican antiquities, prepared by Mühleupfordt for publication. Besides a numberless mass of drawings made for Sir John Soane himself by his pupils, Joseph Gandy, G. Basevi, G. Bailey, and other artists of his own buildings and projects, there are four large folios containing drawings of the Bank of England, and which are very fine and effective. In fact, there is a profuse mass of striking matter and authentic documents in this collection; most of it unpublished, and much that deserves to be more known. It is to be hoped that the trustees will, without further delay, publish a catalogue, and thus render these treasures more available for public inspection and study. From want of this they are at present unappreciated and seldom alluded to.

The Dilettanti Society of London possess a valuable series of the beautiful original drawings of Greek buildings, made for them by P. Gandy Deering and Bedford, afterwards engraved in their volumes of antiquities. There are also numberless sketches by their colleague, Sir W. Gell, and more recent drawings by Mr. Pullan, of the Temple of Teos. It is to be regretted that these fine productions of artistic skill are not more carefully arranged and bound up together, and deposited in the library of the British Museum, to complete the series already there,—the gift of this enlightened society, who, by their researches and publications, have rendered such essential service to architecture, and at great outlay have carried out most important researches in Asia Minor and Grecia propria.

I must also call attention to the very important series of paintings, drawings, photographs, and models of buildings in our Eastern possessions, preserved in the Indian Offices, Downing-street, and to which very important accessions are being constantly made by the enlightened policy of the Secretaries of State for India, the Council and their officers, who afford every facility for their inspection.

In the Duke of Devonshire's Palladian Villa at Chiswick, there is the most interesting collection, made by Lord Burlington, of Palladio's drawings; a catalogue of which, drawn up by Mr. A. Poynter and myself, is in the library of this Institute, dated 17th November, 1845.

OXFORD.—There are, at Worcester College, fifteen drawings, mounted on rollers, and thirteen on sheets, of Inigo Jones's design for Whitehall Palace. And at All Souls' College, three volumes of Sir Christopher Wren's drawings, a catalogue of which was drawn up by Mr. James Elmes. And in the Radcliff Library there are many original drawings by Gibbs of St. Martin's Church, and of his other buildings. A catalogue of these collections is at Oxford, and a copy exists in the library of this Institute, drawn up by Mr. G. Gutch, Fellow, and dated 6th February, 1836.

I cannot conclude this imperfect summary without calling the attention of our members to the valuable series of admirable original drawings existing in our own library, and too generally unknown, although they are briefly noted at the end of our catalogue, page 159. There are original sketches of Chambers and his pupil Yenn; A. Leclère's series of the portico of the Pantheon at Rome; J. M. Lockyer's forty inimitable coloured drawings of mosaics, floors, and marble inlays; Henry Parke's masterly drawings of Egyptian, Grecian, and Sicilian buildings, measured from the monuments themselves; Athenian Stuart's Sketch-book; Joseph Wood's twenty-eight original drawings in France

Italy, &c., and series by D. Mocatta; and of plans, elevations, sections, and details of Turkish and Early Christian buildings by M. Texier; others by J. J. Scoles, Jas. Savage, H. L. Elmes, Pugin, Thos. Little, &c. Our diligent librarian is now engaged in arranging them, and we may expect to be furnished ere long with a complete catalogue.

In the course of the discussion which followed, mention was made of the collection of drawings, by Mr. George Scharf's father, of old buildings in London. These comprise illustrations of the topography of London in all directions, and record numbers of buildings and aspects of streets which are every day disappearing. Further, that the Institute posseeses a volume of original drawings, by Italian architects, of considerable interest. Amongst them are some valuable drawings attributed to Bernini, Bibiena, Borromini, and other clever and facile Italian architects and designers. In the portfolios, too, there are many of the works of the Italian draughtsmen who drew ornaments for Adams and Chambers.

A BIT OF OXFORD.

IF Dr. Waagen really said, as we have seen it reported of him, that the High-street at Oxford had not its equal, as a street, in any town in Europe, he probably viewed that famous thoroughfare through a pleasanter medium than the driving snow and sleet which spoiled its *ensemble*, and the temper of the spectator at the same time, on an early day in the past month. Under such circumstances, when "the windings of that glorious street" had become "stream-like" in a sense not intended by the poet, scarcely even could the sight of "domes and towers, gardens and groves" overpower that "soberness of reason" which counselled a speedy retreat from the contemplation of this architectural and picturesque effect to the "collegiate shelter" of one of the "sacred nurseries" standing in hospitable proximity. Yet, although to the eye of the strict architectural critic there may be little to give entire satisfaction, and making every allowance, too, for historical and archæological associations, there remains sufficient of genuine charm in the aspect of the High-street to justify the enthusiasm alike of the poet and art-critic;—a charm derived, however, not from any conscious or intentional striving after effect in the grouping of the various buildings which flank the street, but from the unexpected and irregular opening of one object of interest after another, from the University Church, with its grand though not very refined spire and picturesquely inconsistent Italian porch with twisted columns, down to where the well-known Magdalen Tower looks over the cloistered court of the college, and the broad meadows and deer-park beyond. The tower stands, with a not unpleasing effect, at a slightly oblique angle with the main quadrangle of the college. Beyond this, too, is "Addison's Walk," so assigned by tradition as the favourite promenade of "the Spectator,"—a long straight alley between hedges and low trees, looking bleak and desolate enough at the time of our last visit, but which, under a milder summer sky, might seem no uncongenial resort for one whose genius was, both figuratively and literally, that of a man

> "That in trim gardens takes his pleasure."

Of new buildings at present in progress there are not many, so far as we were able to ascertain. A gap in the line of the High-street marks the site of what was, if we remember rightly, the Angel Hotel, but where now the new "Schools" are to be erected, to supersede the old classical building wherein the mixture of the different "orders" excited the wrath and contempt of Mr. Jonathan Oldbuck. Crossing over to "the Parks," on the outskirts of the city (so termed as marking the former position of some "parks of artillery" maintained there at the time of a certain struggle between the King and the Commons of this realm), we find the additional wing in progress as an adjunct to the now well-known museum buildings of Messrs. Deane & Woodward, which have been the occasion of so much sharp criticism and extravagant laudation. The new building, lately illustrated in our pages, and which is in the same style as the older portion, stands at a little distance from the latter, from which access will be provided to it by a covered passage of communication; it is intended for the pursuit of certain special branches of scientific investigation. In the main building a large amount of carving, in the shape of caps and bases, &c., remains to be donet internally; and, when this is accomplished, the internal aspect of the staircases and gallery may perhaps have less of true monastic sternness and discomfort than it now presents; though no such amelioration can altogether atone for the unsatisfactory design, or want of design, in the iron roof, where a maze of girders and ribs, twisted in shapes supposed to be in keeping with Pointed architecture, spring from attenuated columns, with ragged iron foliated capitals of a design quite out of keeping with the material. A museum better and more systematically arranged, as to classification of the various specimens in the readiest manner for comparison and reference, we do not remember to have visited.

Not far from the museum the new "Keble College" is in progress, in the most approved "holy zebra" style of brickwork with many stripes; and we heard of, but did not see, two churches recently built in the town. These, and whatever other new buildings may be in progress, we may characterise in detail on a future occasión and under circumstances more favourable for observation. But it would be an unpardonable omission not to bestow a word of hearty appreciation upon one new building which every one who has an eye for what is quietly picturesque in architecture will see with pleasure; we allude to the new portion of Balliol College facing Broad-street, recently built from the designs of Mr. Waterhouse. This line of building, with its solid but not heavy square centre tower, its corbelled oriels at each end, and happily treated intermediate windows, seen at present in the bloom and freshness of newly-hewn stone, forms as pleasant an episode in modern street architecture of the Gothic type as we remember to have seen of late, and is perhaps more thoroughly successful than some of the larger works with which its architect's name has been connected.

A rainy afternoon at Oxford, however, will scarcely be regretted, if it lead the visitor to spend a good portion thereof in the Bodleian Library. Externally, by the way, the architectural student may obtain a hint, in the two or three acres of panelling which cover the inner wall towards the quadrangle, as to one way of treating wall-space where no windows are admissible. Internally, it is scarcely necessary to say, the interest is of a varied nature. There are those who will find the memories and associations suggested by such a place sufficient food for thought, without taking account of details. There are more curious spirits who will be keen to investigate the rich collection of illuminated MSS. and autograph letters and documents. The fine panelled oak ceiling in one portion of the rooms will not escape the notice of the architect, and is, perhaps, the one feature which will present much interest for him professionally. Persons of realistic tendencies may derive pleasure from the inspection of the Guy Fawkes lantern, affirmed to be undoubtedly genuine; a pleasure which we, however, do not profess to comprehend: and there are others to whom there will be much that is eminently suggestive in the mere sight of the silent multitude of books, fraught with useful or useless learning, from the more modern and manageable-looking octavos to those mightier tomes of an age when books were fewer than at present, and erudition moved with a slow and solemn pace, and was laboriously stored under

> "That weight of wood, with leathern coat o'erlaid,
> Those ample clasps of solid metal made;
> The close-press'd leaves, unoped for many an age,
> The dull red edging of the well-fill'd page;
> On the broad back the stubborn ridges roll'd,
> Where yet the title stands in tarnish'd gold."*

But with all sympathy for Dr. Johnson's views as to the advantage to be derived from an occasional study of the backs of books, perhaps we may say that the mere spectator in the Bodleian will turn with most interest to the portraits ranged upon the walls,—interest historical with regard to the persons represented, artistic in regard to the names of the painters who executed the likenesses. Among those that are likely to stand out predominant in the memory may be mentioned the "Henry VIII." of Holbein, and the "Charles II." of Vandyck, both so full of character and originality as at once to induce a strong presumption of their truthfulness, the latter especially in its hard repulsive lines standing as a notable comment on the effect ascribed by Burns to the indulgence of licentious passion,—"it hardens a' within, and petrifies he feeling." An equally remarkable portrait is Holbein's "Mary Queen of Scots," a youthful face of almost infantine roundness and softness, and which in its sensuous but exquisite beauty gives a better idea than any other likeness we have seen of the kind of power which its possessor must have exercised over the hearts of weak fellow-mortals. Not far from this, and in strong contrast to it, the half-length likeness of Flora Macdonald meets us; a fine energetic face, with very strongly-marked Scottish features, and certainly not of that type of beauty which most readers of *Waverley* have been accustomed to figure to themselves. Reynolds's portrait of Payne, the architect, and his son, is one of those in which the artistic interest surpasses the historical; while in the likeness of the chivalrous Falkland, and in the thin studious face of Erasmus (the latter a Holbein) the two forms of interest are about evenly blended. No visitor can pass without noticing a portrait bust placed in one of the windows, of a head of such splendid perfection of feature as might have been designed to represent an Apollo, and the noble and dignified expression of which seems to coincide but ill with some of the traits history has left us touching Churchill, Duke of Marlborough. Another bust, which might be passed over by a hasty visitor, "A Bacchante," by the Hon. Mrs. Damer, is well worth attention for the delicate modelling of the features, and the truly Greek expression of sensuous beauty, without thought or contemplation, which has been imparted to it, and as the work of the most distinguished of our very few female sculptors. On a pedestal apart stands another portrait bust bearing the name of W. E. Gladstone, which will have an interest not only for the present, but for a good many future generations, and which shows features less worn and furrowed by hard work and responsibility than those which are just now familiar to us.

These are but a few of the objects of interest that are to be seen in the Bodleian Library; but we have said enough to indicate that there are attractions there for other than literary students.

Among recent buildings, the interior of Exeter College chapel should not be passed over, including Salviati's mosaics in the chancel, satisfactory in general effect as a durable means of mural decoration, highly unsatisfactory æsthetically to those who do not wish to see all ecclesiastical decoration assume an archaic form. If the visitor to Oxford, however, wishes to see mural decoration in its noblest form, he will certainly go to the room of the Union Debating Society. Who was responsible for the well-known "frescoes" here we could not ascertain, nor could any one tell us their meaning, or what they were all about. Suffice it to say, that the wall of the room, over the strangers' gallery, is covered with sundry wild-looking paintings of apparently allegorical figures larger than life, and drawn with a sublime disregard to the fact that the wall is pierced here with circular foliated clearstory windows, which cut into the sides, shoulders, and heads of the figures indiscriminately. Anything more absurd and purposeless-looking in the way of decoration can scarcely be found in a modern building.

If from the sublime to the ridiculous is but a step, from luxury to the reverse is sometimes, even in these civilised days, but a short cab-drive. A greater contrast there could scarcely be, under the circumstances, than is experienced in leaving the roomy, well-furnished, comfortable Randolph Hotel (built from the plans of Mr. Wilkinson, whose new laboratory at Eton we engraved the other day), for the mean, dirty, ill-kept railway station which the Great Western Railway Company consider sufficient to meet the traffic of such a town as Oxford. On the morning of our departure, those who, while waiting for a tardy train, wished for some shelter from the cutting wind which drove through the station, found the "first-class waiting-room" represented by two chairs placed before the booking-office fire, in the draught between two doors permanently open; and everything about the so-called "station" is on a similar scale of comfort and convenience. In our relations to our tyrants of the iron roads, we English are certainly in the main a long-suffering race of people. "We" ourselves have long resented this sort of ill-usage, and it is with a very hearty and sincere grumble at the meanness and false economy of railway companies in general that we for the present bid adieu to the spires of Oxford.

* Crabbe: "The Library."

FRENCH SUBURBAN VILLAS.

Under this title Mr. W. H. Picton recently read a paper at the Liverpool Architectural Association, suggested, as he said, by Mons. César Daly's "Architecture Privée sous Napoléon III."

Mr. Picton said at starting,—No branch of the architect's profession excites more interest amongst the public at large than the planning and designing of residences. For one person who would watch with interest the progress of a great public building, fifty would study the arrangements of a new house and criticise minutely all its details. Everybody has a word to say here. The patron complains, after sternly limiting the cost, if he does not get everything in the way of accommodation which he has set his heart on; the lady upbraids if her beau-ideal in the number of pantries and closets is not provided, and even the servants take your name in vain for every smoky chimney and defective drain, while for some of these matters the architect is as innocent as a babe unborn. Seeing that such is the case, it seriously behoves all architects who wish to achieve success in this department of our art to welcome every hint which may be derived from any source, and amongst others from a study of the houses of our Continental friends.

I am quite aware that the conditions which govern the designs of residences in France are different in many respects from what they are in England. But making all due allowance for differences of climate and habit, I think there will still be much remaining that we may learn.

The lecturer then reviewed a number of the designs which were before the meeting. Speaking of one wherein the architect had shown no anxiety to keep his work in accordance with any given style, he said,—

The detached chimney stalks have a very weak effect, jutting up as they do from the cornice and not indicated in any way below. Amongst the many hints derived from the Gothic, it is strange that the architect did not think of expressing them more distinctly. These drawbacks apart, there is very considerable merit in the design, and now for what is excellent about it. The wings have buttresses at the angles, starting under the string-course, and carried down with one set-off only to the ground. I can see no reason whatever why our Gothic friends should monopolise this useful feature. In this case it gives stability to the corner of the wing, and also widens out the side of the building to receive the conservatory, to which it also gives a finish. Looking generally over the front, it will be seen that while the pediments over the centre and turret windows, the main cornice and round-arched windows are Italian in style, the coupled windows, the dormers in the centre of front, and the splays above the strings, and many of the mouldings, are perfectly Gothic in feeling. On the whole I submit that the fusion has not been unsuccessful. Our French brethren display more courage than we in the architectural struggle after beauty. Why is this? It is certainly not because they do not understand the styles in their purity, for no nation in Europe has produced finer examples of representative buildings in all the known types of the art. It is not that they are careless about harmony in such matters, and do not care how heterogeneous the elements are which they heap together, provided only they create an effect; for all the details of their buildings show the most careful and scrupulous study which will stand the test of minute examination. I suspect that there is a deeper and a better cause than either of the above. I believe that their art education has been carried to such a high pitch that they have become thoroughly grounded in the principles of beauty; and, having reached a higher level in the art, they breathe more freely the liberal air. They refuse any longer to be tyrannised over by any style, and their art for them

> "Has centre everywhere,
> Nor cares to fix itself to form."

The following were the suggestions arrived at:—

1. I would impress upon our student members the great importance of careful planning. The minutest matters become great in the arrangements of a dwelling.

2. In the laying out of land, kitchen gardens and planting grounds should be worked in harmoniously with the general design.

3. There should in every dining-room be a window at the head of the table.

4. Play-rooms and school-rooms for children are better separate from the house in detached buildings, where this can be managed.

5. Hints derived from the Gothic and Classic styles can be successfully combined by careful study.

6. Our great object should be, not so much to act on the principles of any one style as on the general principles of beauty.

7. Our art must satisfy the imagination as well as the reason.

8. A conservatory may be made valuable as a communication between apartments.

9. There is a rule of three in our art as well as in arithmetic, and equally important, as we shall find on examination.

10. The stone balcony and iron balustrade are worthy of imitation and use, to relieve the flatness of our house fronts.

11. Window-heads and string-courses may be made mutually to assist each other, by an avoidance of harsh contrast and close contact.

A CHÂTEAU OF WILLIAM THE CONQUEROR.

The quiet little Normandy village of Toucques very rarely, I should think, sees the face of an Englishman. The light of a British countenance must be still more rare at Bonneville, a microscopic hamlet away amongst the fields, a couple of miles beyond Toucques, and far from any high road. Yet at Bonneville there is an object of great interest to Englishmen. It is one of the favourite châteaux of William the Conqueror, as well as of some of his successors, and of his ancestors, back to the days of Robert le Diable, and Rollo himself, who is said to have first built it. It is a rare old ruin almost buried in verdure, and though it was once a proud and mighty stronghold, it is now like a grey, worn-out, and somnolent patriarch slowly disappearing from the earth.

Knowing that the locality is out of the beaten track of visitors to France, and probably entirely unknown to more than a very few Englishmen, it appeared to me desirable to send a short account of the old castle to the *Builder*. Toucques, to begin with, is far from all railway communication, and although only a few kilomètres from Trouville, the latter fashionable and admirable watering-place is not so well known to Englishmen as it deserves to be, although much resorted to by people from all parts of the continent, and even America. Bonneville, it may fairly be assumed, is therefore a perfect *terra incognita* to Britons.

Those places are all in the department of Calvados, and in a district which, in respect to Anglo-Norman history, is superlatively interesting. In and close to the department of Calvados, perhaps more than in any other part of Normandy, events occurred which have had the greatest influence on the destinies of England and her people. The chronicles of Falaise, Lisieux, Bayeux, Caen, Honfleur, Harfleur, Barfleur, St. Valery, &c., should contain records of events which make all the difference between England as she has been and England as she might have been. There is hardly a village, a stream, a rock, a castle, or a church in this region that has not some event connected with it which greatly influenced the fate and fortunes of England, whether that event was a birth or a death, a warlike muster, a battle, a shipwreck, a treaty, a marriage, or an imprisonment. The most ignorant peasant of the locality is prompt to remind the wandering Englishman that "we Normans conquered England." The comparatively modern name of Calvados is also associated with English history, for it was borrowed from a great Spanish ship of Philip's "Invincible Armada," wrecked on this coast.

Turning his back on Trouville, passing Toucques, with a glance at its massive and magnificent old Norman church (in a sad state of dilapidation), the pedestrian works his way amongst bye-roads and country lanes to the hamlet of Bonneville. As he approaches it he sees before him, on an abrupt, commanding eminence, the ivy-clad and weather-worn ruins of an ancient Norman castle, perched aloft like an abandoned eyrie. If he is fortunate enough to meet with a passing peasant he will learn that it is the Château of Guillaume Conquérant.

I must make a humiliating confession to a good deal of ignorance of this castle. I had never heard of it, was not aware of its existence, had not the slightest intention of visiting it, and merely came upon it by accident in the course of an idle summer-day's ramble from Trouville. I was therefore at the mercy of some doubtful recollections of early Norman history, and the exaggerations of a very civil guide, who, in addition to conducting you over the ruins of the castle for the very moderate fee of cinquante centimes, tells you all he knows or has ever heard about the old place, and perhaps a good deal more. With him every vault (where probably the ancient lords of the castle stored munitions and provender), every cellar (strongly suggestive of casks of Burgundy of other days) were so many dungeons in which "les malheureux d'autrefois" were cast to pine away and die.

Exaggeration is the tendency of all guides, and it is as well to be on your guard with respect to what they say, especially if you have not "read up" for your visit. In this case I was assured that here was "the Tower of Rollo," there "the Tower of Robert le Diable," that "the Tower of King John," and so on. Yonder was the window at which Queen Matilda worked a portion of the Bayeux tapestry; that gloomy little chamber, hollowed out in the thickness of the wall, was the cell in which the blinded Count de Talvas was confined for the miserable remainder of his life. Many other highly curious and interesting chambers and structures had their special and sensational histories.

Yet with all this mistrust of my guide's veracity and the accuracy of his statements, there could be no doubt of the great antiquity of the château, or that it must have been the scene of many remarkable events. That was always a consolation in the midst of one's doubts and suspicions. If it was not easy to believe (as my guide asserted) that the ceremony of swearing in Harold, over the box of holy relics, to support the pretensions of Duke William as successor to Edward the Confessor, took place in that little chamber, and not at Rouen, it was certain that the chamber was there at the time, and William and Harold, and perhaps three or four others, *might* have managed to squeeze themselves into it had they been so minded. The possibility of Matilda working at her many yards of tapestry in a bower of the dimensions pointed out might in like manner be dubious, but certain it is that the bower existed contemporaneously with her, and *perhaps* she may have sat in it, and embroidered something of the size of a pocket-handkerchief, or have contemplated from the window the magnificent prospect of hill and valley, sea and shore, beneath.

Thus none of my guide's stories were absolutely impossible, though a good many of them were improbable. The part of the structure attributed to Rollo was most likely built by him. It was evidently of far earlier date than the rest of the ruin, and its great stones were worn and honeycombed in an extraordinary manner by the wasting action of a thousand years of storm and rain, heat and cold. Subsequent Dukes of Normandy added to this original edifice (little more than a simple tower in itself), and made a strong and important fortification covering a large extent of ground. The outer walls, with strong towers at intervals, rise from the edge of a deep fosse,—in fact, they look down upon a precipice all round their circumference. Advantage was taken, obviously, of a position naturally strong and precipitous, and this was improved by scarping the hill-side where necessary. In its day the château must have been all but impregnable.

There appeared to be no reason either to doubt the statement of the guide that in former times the sea, which is now a considerable distance from the locality, originally came close to the foot of the hill on which the castle stands. The broad and flat valley, running inland a considerable distance, which the château overlooks, was in all probability an arm of the sea in olden times.

The ocean is still receding along this coast, and a flourishing town (Deauville) has been founded amongst the sand-hills by the late Duc de Morney, where a few years ago the waters held undisputed sway.

The little river Dive flows through the valley in question, and it is recorded in history that it was from the mouth of that river that William's fleet sailed for the conquest of England. The high probabilities, therefore, are, that the local tradition which asserts that the Norman fleet assembled in the estuary of the Dive (now the flat valley I have mentioned) is quite correct. Neither is it unlikely that it was from this castle of Bonneville (as the guide alleged) that William embarked for the conquest of England, while

Matilda waved her good wishes for the success of the expedition from the battlements.

The great arched gateway which spans the main entrance to the castle is a splendid specimen of early architecture, all ruinous as it is. It is a broad pointed arch, and around it are traces of the original flutings and other ornamental efforts. It looks towards the sea, and is nearly, if not quite, due west. The large area within it, enclosed by the walls of the castle, contains a handsome modern mansion, extensive lawn, pleasure-grounds, &c., belonging to the present proprietor of the ruins. Everywhere beneath the house and grounds old foundations and fragments of massive masonry exist, the external shell of walls and towers alone remaining above ground. Near the main gateway the guide led me down a long and precipitous flight of narrow stone steps into a gloomy subterranean passage, which can be traversed for some distance. Further progress along it is prevented by a mass of *débris* and fallen rubbish. The local tradition holds to it that the passage in question originally ran as far as the forest of Toucques, nearly a mile distant. On the other side of the château there is a similar passage, blocked in a like manner, and also supposed to be of great length. The utility of such passages in olden times is obvious enough.

Undoubtedly this château of the Dukes of Normandy must have been an important place, and it is a splendid and interesting old ruin. The most careless observer cannot fail to be impressed by its massive remains. It has not been fairly used, or much more of it would be in existence. Former proprietors were wont, it seems, to turn an honest penny by treating it as a sort of quarry, and selling the stones. It is satisfactory to know that the place is no longer in the hands of those Vandals, the present proprietor being a man of antiquarian tastes, and he does everything in his power to preserve what remains of the old structure.

As already intimated, portions of the outer walls and towers, together with the donjon keep, now alone remain in ruinous grandeur, and they bear ample testimony to the sordid avarice of the Vandal proprietors of past times. There are considerable remains of five towers, and the remains of a sixth are just traceable above ground. The (so-called) Matilda's chamber and Harold's Chapel, the donjon keep, a deep well in the thickness of the wall, the vastness of that thickness in some parts, and a number of small and gloomy cells, constitute the most interesting features of the ruin.

The donjon keep is in a comparatively good state of preservation. It is built up from very deep-laid foundations, and until recently much of its area below the level of the ground was filled up with rubbish. The present proprietor has caused most of this accumulation to be cleared out. The walls are of enormous thickness, and very little light is able to struggle through the few and narrow loopholes.

We stood on a sort of rough floor or platform formed of planks, about level with the ground, while examining the interior of this structure. The depth below us was dark and profound, and there was a great space above and around. Altogether it was a gloomy, vast, and terrible place, although now no more than a harmless ruin. In the thickness of its wall several small chambers or cells were scooped out, only too suggestive of their use in former days. Woe to the unhappy wretches (*d'autrefois*, thank Heaven!) who were cast into these holes by the cruel lords of those days! Even the most privileged of them could only enjoy the air and light of heaven through a narrow, deep, and heavily-grated opening.

In one of these latter cells Duke Robert (so said my guide) was for a time detained a prisoner, after his unnatural brother, Henry I. had deprived him of his sight, and before he had been finally transferred to Cardiff Castle, to pine away in darkness and silence the remaining years of his once wild, gay, and chivalric life. Amid such associations it was not difficult to conjure up the figure of the unhappy knight standing at that narrow loophole, with his pale, scarred, eyeless face turned up to catch the fresh air, as it blew through the grating, silently picturing to himself the aspect of the glorious but invisible landscape before him, with which he was once so familiar! Blessings on thy active tongue, thou very magpie of a guide, for that incessant, "d'autrefois! monsieur, d'autrefois!" for it reminds me that such cruelties are done with for ever!

The present proprietor of the ruin was, I understood at the time of my visit, preparing a much-needed guide-book to the château. He has done much for the preservation and partial restoration of the castle. Several of the old vaults, passages, &c., have been more or less cleared out at his expense, and the decay and downfall of other parts of the edifice arrested. In the course of these operations some time ago, the workmen discovered in a corner of the grounds, near the outer walls, a large quantity of human remains. The spot is supposed to have been a sort of private burial-ground of the château. A multitude of objects in stone, metal, pottery, have been turned up from time to time—bits of helmets, sword-blades, spear-heads, domestic utensils, articles connected with religious worship, including a mutilated stone statue of the Virgin and Child.

The funds at the disposal of the proprietor for clearing out and restoring the ruins appear to be (as might be supposed from the vastness of the work), very inadequate; and I learned that he was negotiating with some English "milord," with a view to securing the wherewithal to accomplish the excellent object he has in view. Any one who has seen those interesting ruins can have only one wish in the matter, and that is that he may be entirely successful in his negotiations.

J. D. D.

THE NATIONAL PORTRAIT GALLERY.

THE pictures constituting the National Portrait Gallery, are now hung in part of the 1862 Exhibition building, South Kensington, above the Meyrick arms and armour, and for the first time the full value of the collection already made becomes apparent. Cross-screens to receive the pictures have been set up, as on the occasion of the recent portrait exhibitions, only on this present occasion the screens proceed from the front wall, containing the windows, and the continuous passage is next the back wall, against which, on a shelf, are disposed the busts, somewhat too high up, with a few paintings below them. The portraits are now 295 in number, of which eighty-six have been presented, and they occupy the whole available space. Under the direction of the able secretary and keeper, Mr. George Scharf, a chronological order, the death-year being taken, has been attempted, and to a considerable extent maintained. Fresh arrivals, the inequalities in size, and various other matters, however, interfere, and thus make it more difficult than might be supposed. The first portrait on the first screen is that of King Richard III. (supposed to be the earliest in the collection), but before reaching it the visitor must pass a full-length portrait of the lamented Prince Consort (Winterhalter), and some other pictures of our own time. We must offer thanks for the complete way in which the collection is labelled. No catalogue is necessary (though a list of the portraits is very properly printed and given away), and the visitor may here obtain with very little trouble a large amount of instruction as well as pleasure. One *query* for the sake of clearness. Pictures painted in the manner or by the follower of a certain master, say Vandyck, are described, when the actual painter is unknown, as "painted in the school of Vandyck." This is not a good phrase, and should be re-considered. Taken as English, it asserts what is not the case.

We have to thank all who have been concerned in rescuing the portraits from the holes and corners of Great George-street, and setting them forth in a manner which admits of their being fully appreciated and enjoyed.

TOWER SUBWAY.

IN so far as the completion of the iron-cased tube through the London clay, under the bed of the Thames, between Tower-hill and Tooley-street, is concerned, the work was practically finished some months since. Six weeks ago placards were publicly exhibited, announcing the opening of the communication upon an early day; but the perfecting of the mechanical arrangements appears to have proved almost as formidable an affair as the part of the work that might have been thought most serious. For five or six weeks the engineer and the contractors have been constantly and anxiously at work in the completion of the waiting-rooms and engines, but especially in endeavouring to get the lifts and the hauling apparatus into smooth, swift, and safe working order. During the week a large number of visitors, including the Duke of Sutherland and bevies of ladies, with many less highly-distinguished personages, have visited the subway, and taken experimental trips from one end to the other, by the compact iron omnibus in which the passengers are to be conveyed. An announcement appeared in the morning papers that the subway would be opened for traffic on Wednesday last; the opening was again postponed till Thursday; but from a visit we paid to the works on Tuesday last we took the impression that a good deal still remained to be done before the traffic could be conducted with comfort and celerity. As regards safety, there is no ground for fear. Mr. Barlow's new brake, applied to the lifts, seems to be admirably adapted to arrest the descent of the cage in the event of the suspending chain breaking. While the chain remains intact, two pairs of jaws are held in a certain position clear of the guide rods. If the chain snaps, these jaws are released and gradually grip the rods on each side. But this precautionary tackle is almost superfluous, as no serious accident would be likely to result from the drop of the lift from top to bottom of the shaft, which is something under 60 ft. deep, at each end. It rests at the bottom upon, and is stopped at the top by, strong bars of elastic steel, with a number of properly-adjusted blocks of india-rubber in three thick layers. The effect of the sudden descent of the lift, as ascertained accidentally already, has been that it reaches the bottom in about six seconds, instead of twenty to twenty-five, and rebounds a few feet upwards on striking the steel bars at the bottom. Six passengers are the complement of the lift. The great iron block which balances it is an equipoise for the empty chamber, and it is loaded, in addition, as for three passengers, so that the margin can never be wide between the weight of the two, nor the power great that needs to be exercised to raise or lower the lift. There are now two small engines at the bottom of each shaft, one for haulage of the omnibus, the other for raising and lowering its lifts. The entrances at each end from the streets show square chambers of about 9 ft. on the side, covered by pavilion roofs with wide projections round the eaves. The omnibus is roomy as regards width, but low in head room, the hat catching uncomfortably the arched roof. An efficient system of signals, from one shaft to the other, seemed to us a desideratum still remaining to be supplied; but we have no doubt that this and all other necessary and finishing touches will be successfully applied. From our latest inquiries we are led to conclude that the subway will be opened for public traffic on Monday, April 4th, certainly not sooner; the erroneous statements that have been made during the week in the morning papers have caused much disappointment and inconvenience.

RESTORATION OF A SPIRE VANE AT HEREFORD.

A STEEPLE-CLIMBER, Mr. Frith, of Coventry, has been employed to examine the vane and spire of All Saints Church, Hereford, and take down and replace the weathercock, for 15*l*. The height to the capstone is 212 ft. 4 in., and to the top of the vane 220 ft.

Mr. Frith, with a pupil, commenced operations, as usual, by flying a kite, of silk, about 4 ft. square, with paper tail, a tassel about 50 ft. long, and a double line of cord; and after a good deal of trouble in climbing from the bowling-green, by help of ladders, over houses, the kite was soon moored so as to bring the guide line over the capstone of the spire and against the spindle of the vane, but here some interruption was threatened, as the rope got into a crevice, and Steeple Jack had to make an ascent upon an adjacent building to liberate his lines.

The anchor line having been duly brought over the vane spindle, the kite was gradually drawn down, and its tail fell in an apple-tree in the mayor's garden, a large rope attached to the guide-line having been at the same time drawn up, and both ends eventually brought into Bewell-street, where they were secured underneath the church walls. A third or "counterpoise" rope was then raised with ten stone of iron weights attached to it, as a balance or counterpoise to Steeple Jack when he should find it necessary to ascend. Attached to these ropes was a "cradle" or chair, a very simple apparatus in which the steeple-climber seated himself, a disproportion in the balance formed by his body and the iron weights being produced by the use of his feet, with which he paddled or urged him-

self up and down this inclined plane just as he desired.

It was found necessary to order out a large body of police to prevent persons from traversing those streets into which loose stones from the ribs of the steeple might, and in fact did, tumble when disturbed by the feet of the climber. He went up and stood upon the cap of the stone-work and beside the vane, which is 220 ft. from the ground, in three minutes.

Having descended for tools, he remounted the spire, and proceeded (by clipping the spindle with his legs) to use both his hands in dislodging the tail of the bird, to which he attached a cord and swung it in the air amidst the cheers of the multitude. Finding that the implements used were not fitted to remove the ferrule on which the cock was placed, he again descended for a hammer and cold chisel. Armed with these implements he was again in about a minute or two up the ropes, and cutting at the brass ferrule until he was able to lift the body of the bird off the spindle. Within an hour and two minutes of the time of his ascent he had brought the vane into the vestry of the church, where it was found to weigh about 26 lb., was 4 ft. 6 in. from beak to end of tail, and bore upon the comb of the bird the following inscription:—"G. Colloe, fecit 1787." When repaired, the steeple-climber will replace it. Mr. Frith is about to do a similar job at Worcester.

The wind blew stiffly, but the climber chose the right side for his ascent.

A PLEA FOR CULTURE IN THE PROFESSION OF A SURVEYOR.*

THE landmarks of the professions have been broken up in consequence of the sub-division of labour. Take our own profession as an example, and consider how it has grown up. We have a recognised existence; we have grown into an institution. In the beginning of the career of many of us the modern surveyor was unknown. The owners of property had for the most part legal professional men as their confidential advisers, who collected their rents and managed their estates, generally, in a very inefficient manner. The surveyor occupied a simply subordinate position—generally employed by the professional man, and without any particular training, except what he acquired by his own practical experience. But now, stimulated by the vast improvements in agriculture, by the rapid development of our mineral wealth, by the immense extension of railways, and by other causes, the surveyor has gradually acquired an independent position: he is now himself the confidential adviser of owners of property, instead of being dependent on other professional men for employment.

It is well for us to be reminded of this gradual continued increase in the importance of our profession, in order that we may be more impressed with the necessity for a simultaneous expansion of our education and culture.

To what, then, has our profession grown, and for the fulfilment of what duties should we seek to qualify ourselves? We must have a thorough knowledge of the agricultural value of land, and should therefore be practical farmers. For the general management and improvement of an estate we must know something about building and architecture; about draining, surveying, levelling, and the cultivation of timber. We must know, too, the mineral resources of the properties with which we deal, which in itself opens up a vast field of knowledge; we must be familiar with manufacturing and commercial properties; we must be good accountants (not so simple an acquirement as some seem to imagine); and we should at any rate be able to solve *ab initio* those problems in annuities, life interests, reversions, and other subjects, the solutions of which we are in the habit of extracting mechanically from published tables.

This certainly seems a long list of acquirements; but something still more important is demanded from him who would excel in our profession. He must be qualified to act as witness, arbitrator, or umpire, three qualifications which demand the most careful training. As a witness he must have clear opinions and clear reasons for holding them, and these opinions he must be able to express in concise and lucid language. As an arbitrator he should have the qualities of an advocate, discriminating those points most favourable to his own case and lucidly enforcing them. As an umpire he should have the qualities of a judge, skill and judgment in weighing evidence on both sides, and in selecting only the material points, not stubbornly clinging to a preconceived opinion, but open to the reasons and arguments on each side, and possessing ability to sift them.

The surveyor should also have a literary and logical culture, in which I am bound to say we are, for the most part, deficient, which will enable him, in the reports he has so constantly to make, to arrange his arguments and opinions in the most concise and logical form; and, finally, he must above all things have tact in dealing with his fellow-men; for, as he must advise the wise and the foolish, the learned and the unlearned, he must have the skill to enter into the minds of those he comes in contact with, and to see things from their points of view, in order that he may know what kind of arguments will be most likely to convince them.

Now a thorough knowledge of most of the acquirements I have mentioned would require the experience of years. A surveyor cannot be so good a farmer as a man with as good an education and ability who spends his life in nothing else; he cannot be as good an accountant as a professional one; he cannot know as much about building as an architect; he cannot weigh evidence like a judge. Nevertheless, our work is not at present so subdivided that many of the gentlemen I am addressing would shrink from giving an opinion on most of these subjects, or occupying any of the positions I have described. A surveyor then, who would excel in his profession, should aim in the first place at acquiring a sound knowledge of the rudiments of each of its branches, and then a perfect knowledge of as many as he is capable of mastering; and this is in fact a limited form of my general theory of education, viz., that a man should know one thing perfectly and know something of everything else. I do not mean that he should have a superficial knowledge of other things, but a knowledge which is real in its character though it may be elementary and limited in its extent.

With this view I consider the best preparation for our profession to be a high general education, because I believe that a mind thus trained may be made capable of acquiring its technical details with a comparatively small expenditure of time and labour.

Let us see what branches of learning are included in such an education, and what influence direct or indirect they would be likely to have on our profession.

For the sake of simplicity we may class them under three heads,—science, mathematics, and literature and logic.

The direct value of scientific knowledge, especially that of chemistry, botany, and geology, is obvious.

We learn from chemistry the component parts of our various soils and of the plants we grow upon them. We therefore know what elements of the soil a particular plant will assimilate, and hence what we must replace there in order to continue the cultivation of such a plant; in other words, we learn the science of manuring.

Again, a botanist, from his knowledge of plants, will see at a glance the nature of the soil on which particular plants are growing, whether it is barren or productive, wet or dry, light or heavy, so that starting with this knowledge, a valuer, with a comparatively short practice, will be able to give a reasonable opinion on the agricultural value of land. The same may be said of the geologist, but, independently of the value of geology, in an agricultural point of view, to the surveyor who has anything to do with the immense mineral properties of this country, a deep knowledge of this science is indispensable.

The knowledge of mathematics, even of a high order, is of direct benefit. Including the more elementary knowledge of figures in this subject, it is of course essential that we should have a thorough knowledge of bookkeeping, of the best methods of keeping our farm, estate, and other accounts. Questions of life interests and reversions, &c., require a considerable knowledge of mathematics for solution; and, though we are supplied with tables which solve most of such questions without our thought or trouble, yet cases often arise in which our tables are not applicable, and it is therefore on all accounts desirable that we should be able to solve all such questions by the light of our own knowledge.

But, independently of the direct practical bearing of science and mathematics, their indirect value in training and disciplining the mind is incalculable. It is a man's great interest, all through life, to find out the truth about those things, no matter of what kind, with which he is concerned. To do this he must be able to judge correctly of the facts which come before him,—an ability which constitutes one of the greatest distinctions between one man and another, and to do which with effect needs all the resources which the most perfect system of intellectual training can command. For this purpose the value of the study of mathematics and science is essential.

Mathematics teaches us the method of arriving at truth from reasoning; it obliges us to lay down with exactness and precision all the premises from which we mean to argue, to keep each step in one argument distinct and separate from every other step, and thus to cultivate a habit of mind necessary to the elucidation of truth.

Science shows us how truth can be arrived at from observation. We do not all profess to reason, but we all of us profess to draw inferences from observation, and I may safely say that no man who is not a student of science can form an idea of what the difficulty of reasoning from experiment or observation really is, or how cautious it is necessary to be, if we would avoid false inferences.

I might speak at some length on the bearing of literature and logic, both directly and indirectly on our profession, but by so doing I fear that I should exceed my proper limit. I will merely observe that one of the greatest wants in our education is the power of expressing our thoughts and opinions in graceful, logical, and grammatical language. We may have arrived at a correct conclusion, either by sound reasoning or by a correct judgment of evidence; but few of us have the art of writing down, or expressing clearly, the way in which we have arrived at it, laying down, when necessary, first the premises from which we start; then the various steps of our argument, arranged without confusion, and stated without prolixity, so that our conclusion may be at once natural and convincing.

This art can certainly be best acquired by a study of literature and logic.

From these remarks you will understand that I recommend for our own education, before we seek to acquire the knowledge of the technicalities of our profession, a wide mental culture such as is generally thought necessary in the older established professions. It is needless for me to enlarge on the indirect advantages of such a training,—I mean, those advantages which are independent of our profession. We all of us have our times of leisure, but we do not all know how to use them best; and this culture must certainly teach us how to employ our leisure with the greatest pleasure to ourselves, and the greatest benefit to our fellow-men.

* From paper by Mr. Jeremiah Matthews, mentioned in our last (p. 244).

ACCIDENTS.

THE roof of a house, No. 31, Horse Fair, Wolverhampton, has suddenly fallen in. The agent for the owner of the property had been informed some days previously of the dilapidated state of the house, and he sent a builder to examine it, and do what was necessary, but the builder reported that the house was quite safe. Two women narrowly escaped with life, as they were in bed when the roof gave way.

While three men were engaged in digging a bed for a waterwheel on a farm at Newdeer, Aberdeenshire, the sides gave way, and they were buried alive. Three other men were injured.

A gas explosion has occurred at Penrith, Cumberland. There had, during the night, been an escape of gas at the residence of Mr. J. Stoddart, Larkhall. When the servant came down she noticed it, and having *shut* the windows, *struck* a light. Nearly all the windows of the house were blown out; the furniture and paintings were partially destroyed; the walls became insecure; and the servant and a charwoman were set on fire, and are so sadly injured that there are doubts as to their recovery. The poor woman must have misunderstood the usual advice given in such cases to *open* the windows, and *not* to strike a light.

Mr. Williams, station-master of Tenby, has been killed while writing in the Telegraph-office, by a large stone from the Leemstone Quarry, where blasting operations were going on.

A terrible conflagration has occurred at

Compta, Bombay. Two hundred houses and 6,000 docras of cotton, equal to 2,500 bales, were burnt, leaving a stock of only 4,000 docras. The loss is estimated at 25 lacs of rupees (250,000*l.*).

BROWNE'S HOSPITAL, STAMFORD.

SIR,—The interesting description of this hospital in the *Builder* of the 19th ult., seems to call for some explanation of what is being done in the restoration.

The desire for the careful conservation of every old feature of the building is closely in accordance with the plans and instructions of the architect, Mr. James Fowler. No portion of the old work is to be touched,—except where most serious settlement has necessitated it,—and it is then to be reinstated, with its weather face, stone for stone.

The new warden's house is in harmony with the long line of the old building, so well known in Stamford. The chapel walls have been taken down so far only as they were unsound; the stained glass, *miserere* stalls, and other fittings being carefully removed, to be replaced intact. The muniment-room partition is to be removed; and an oaken gallery, open to the chapel,—as of old,—formed above the groining of the beautiful screen.

Westward, where the subsidence of the foundations, noted by your correspondent, has caused great dilapidation; the entrance porch and a portion of the south wall will be taken down, the stones marked, and rebuilt.

The quaint, but somewhat unsanitary, cells of the bedesmen will be removed, and the space thus obtained utilised as an ante-chapel and library, open to the chapel screen, and communicating with the sunny south terrace in Broad-street, and the western cloister.

The chapel and ante-chapel will be warmed with hot air: the latter will be a comfortable meeting-place "for old, or poore, or weake, and men unhealthy." This tablet, and the alms-box mentioned in the *Builder*, with other antiquities, are in the care of the warden, the Rev. C. Nevinson.

The western cloister, of three bays of two pointed and intersecting arches, will be extended three bays further northward. The quadrangle thus formed will extend the whole length of the present building, and be bounded on the north by the bede-houses, which are raised upon a terrace, necessitated by the great rise of the ground from south to north. The bede-houses are ten in number: each house has living-room, 14 ft. by 10 ft., with chamber over, and staircase and pantry to each. Spacious laundries and offices are provided. A covered way in front of the bede-houses connects them with the cloister and ante-chapel.

The stone from the old buildings on the site is re-used, with its lichen face, and every ancient feature is carefully retained and re-used in the new work: in fact, I think the most scrupulous antiquary could not object, in any way, to what we are doing; and from what I know of Mr. Fowler's practice, I do not suppose the work could have been placed in more careful hands. The audit-room is to remain as at present, its fine oak roof being recovered with oak boarding and lead, and a new clock-turret built at the south-west angle; the muniment-room will be over the entrance porch. The contractors for the work are Messrs. Halliday & Cave, of Greetham.

WM. G. OSBORNE, Clerk of the Works.

THE TRADES MOVEMENT.

London.—An adjourned meeting of delegates of the carpenters' and joiners' societies has been held at the Duke of York Tavern, York-street, Lambeth, in furtherance of the nine-hours movement. From the reports given in by the delegates it appeared that during the week large meetings had taken place in various metropolitan districts, at all of which resolutions have been unanimously adopted, declaring the great benefit that would accrue to the trade, in its present depressed condition, from a reduction in the hours of labour, and also in favour of the new code of working rules to be mutually agreed upon between employers and workmen. Arrangements were then made for the holding of other district meetings.

Plymouth.—Several Plymouth builders complain of having received threatening letters bidding them prepare for death for employing men from the workhouses, although, as they allege, they are being paid the value of their work. The relieving officer has also been threatened.

Edinburgh. — A meeting of the Operative Painters of Edinburgh and Leith has been held in the Phœnix Hall. There was a good attendance of the trade. The chair was occupied by Mr. O'Brien, and on the platform were delegates from the Trades Council. The chairman introduced the business by stating that a memorial had been presented to the master painters complaining of the excessive number of apprentices, and the introduction of unskilled labourers, who, the memorialists stated, were employed to do the work of regular journeymen at a cheaper rate. The following resolutions were carried unanimously after some discussion:—

"That we, the house-painters of Edinburgh, Leith, and vicinity, use our utmost endeavour to rid the trade of the ruinous system of employing unskilled labour, so prevalent in our trade."

"That, considering the many grievances which exist in our trade, it is absolutely necessary that the house-painters of Edinburgh, Leith, and vicinity, should become thoroughly united, and that this meeting pledge itself to support the same."

The delegates from the Trades Council spoke in support of both resolutions.

Perth.—In pursuance of a resolution come to at a general meeting, the masons in connexion with the Perth branch of the United Operative Masons' Association of Scotland have struck work. Upwards of three months ago the men intimated to the masters in Perth, that if the wages were not raised before the middle of the present month from 5½d. to 6d. per hour, a strike would take place. The masters, with one exception, refused to agree to the demands of the men: hence the present turn-out. Most of the men who are not members of the Masons' Association have also struck work. It is asserted that, as the building trade is not brisk, the principal employers will firmly refuse to give at present the ½d. additional per hour sought by the Operatives' Association.

Glasgow.—The operative joiners, at present on strike, have had a meeting in the Prince of Wales Hall, Buchanan-street. Some discussion ensued as to the present aspect of the struggle, after which it was agreed:—

"That, with a view to the satisfactory settlement of the present dispute, from this date,—21st March, 1870,—until such time as working regulations and bye-laws for the trade are mutually agreed upon, we consider it binding upon employers and employed that the present rate of wages, 6½d. per hour, should not be departed from without three months' notice from either party; and that the present working hours,—from 6 a.m. to 9 a.m., from 10 a.m. to 1 p.m., and from 2 p.m. to 5 p.m., for five days of the week; and on Saturday, from 6 a.m. to 9 a.m., and from 10 a.m. to 1 p.m.; in all, fifty-one hours,—shall not be departed from without six months' notice from either party; and that a copy of this resolution be printed and submitted to those employers who have acceded or are likely to accede to our present demands, for their mutual agreement."

"That in consequence of the non-acceptance of the conference offered by us to our employers, for the purpose of mutually arranging a code of bye-laws for the trade, we offer them another opportunity of so doing. Should such not be accepted within three days, we will print our revised code of bye-laws, and submit them to the trade for mutual agreement, before we concede to any settlement of the present dispute."

The Liverpool carpenters and joiners have resolved to support the Glasgow joiners in their movement.

RAILWAY MATTERS.

Bow.—The new railway station of the North London Company at Bow has been opened for public traffic. The main building fronts the Bow-road, and over the booking and other offices there is a room, or hall, nearly 100 ft. in length, with an arched roof. The platforms and approaches are somewhat similar to those at Dalston Junction. The cost of the new station exceeds, it is stated, 25,000*l.*

Bath.—The Midland Goods-station in Sydenham-field approaches completion. It is built of blue lias, with Box stone dressings. The roof is supported on a light framework of iron, and has rough thick glass in the centre. The offices are at the east end of the station. Sydenham-field being separated from the city by the river, a bridge is being constructed to form a communication between Seymour-street and the goods-station. The bridge will be of cast iron, and in most respects similar to the existing one, with which it will be parallel, at a distance of about 100 yards. It will, however, have no pillars supporting it in the centre. The bridge will have a clear span of 150 ft., while its width will be 24 ft. The abutments on the Seymour-street side of the river are now in course of construction. The works are being carried out by Mr. Humphreys, of Derby, and his manager, Mr. Green, from the plans of Messrs. Allport, jun., & Wilson, the engineers, and the architect, Mr. Saunders.

Sparks.—In the Court of Session, Edinburgh, an action has been brought by Mr. John Murdoch, jun., Castle Douglas, for damages occasioned by a fire which originated through a stream of sparks from an engine on the defendants' line falling on his premises. The damages were laid at 1,018*l.*; the jury awarded 735*l.*

English-built Locomotives Abroad.—The number of locomotives ordered thus far in England for Russian railways is about 350. Of these, 111 have been ordered of Messrs. Sharpe, Stewart, & Co., of Manchester; 15 of the Worcester Engine Company; 22 of Messrs. Neilson, of Glasgow; 78 of Messrs. Beyer, Peacock, & Co., of Manchester; 56 of Messrs. Kitson, of Leeds; and 69 of the Yorkshire Engine Company. A considerable number of these engines are already delivered: others are still on hand.

BERKSHIRE, READING, AND NEWBURY LUNATIC ASYLUM.

THE subject of the accompanying illustration is the newly-erected asylum for the reception of the insane poor of the county of Berks and boroughs of Reading and Newbury. The site is favourably situated on the banks of the Thames at Cholsey, near to the Moulsford Station on the Great Western Railway. The land slopes gently southwards to the river, and is bounded on the north by the turnpike-road to Wallingford. The general outline of the plan affords uninterrupted views of the surrounding country, free access to sun and air, and is so arranged as to give the day-rooms a good aspect. There is no road nor building on the south side, which is appropriated entirely to the use of the patients, and will be laid out for them as gardens and airing-grounds.

The accommodation for male and female patients is kept quite distinct on either side of the centre, and the kitchen and stores are so placed that the service on each side shall also be separate.

The working patients who are engaged in the laundry and workshops are placed in the north block (the one illustrated), in the centre of which are the superintendent's office, porter's room, reception and waiting rooms, visiting justices' room, and steward's apartments. A residence is provided for the superintendent on the west side of the north block, with the front windows commanding the high road and the entrance to the asylum. It is connected by a circular corridor with his office.

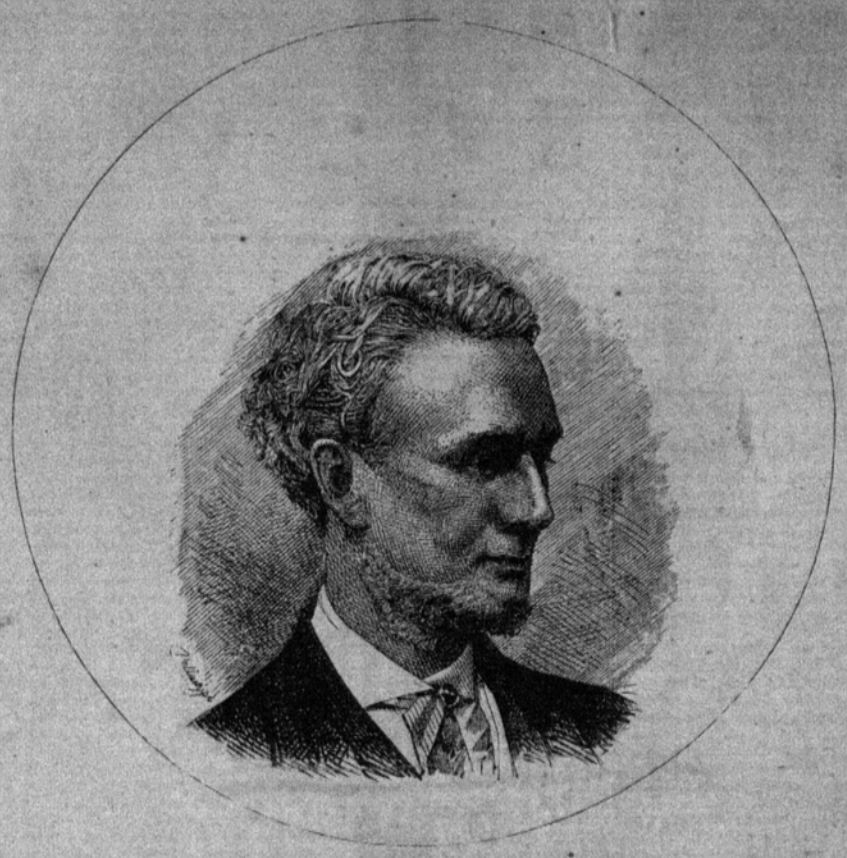
The wards for acute and recent cases, with a large dining-hall, form the south block, and the infirmaries the east and west wings. They are in a quiet position at a distance from the other wards, and where they cannot be used as a thoroughfare to any other part of the establishment. In the centre between the north and south blocks are the administration offices, including kitchen, scullery, larders, cellars, stores, dispensary, rooms for servants, engine and boiler house, pump-house, laundry, wash-houses, and workshops for tailors, matmakers, shoemakers, and others.

The day-rooms, and patients' corridors, and staircases, besides open fireplaces, will be warmed by Haden's hot-water apparatus. Rain-water will be stored in large tanks, and spring water pumped up into cisterns in the tower. All the buildings will be lighted by gas made at works erected for the purpose on the ground.

The estate, which covers an area of sixty acres, will be laid out and partly cultivated by the patients. The sewage will be applied to the land. There are farm buildings, including stabling for horses, cow-house, piggeries, root-house, &c., and cottages for the farm bailiff and engineer, as well as an entrance lodge and cottage adjoining.

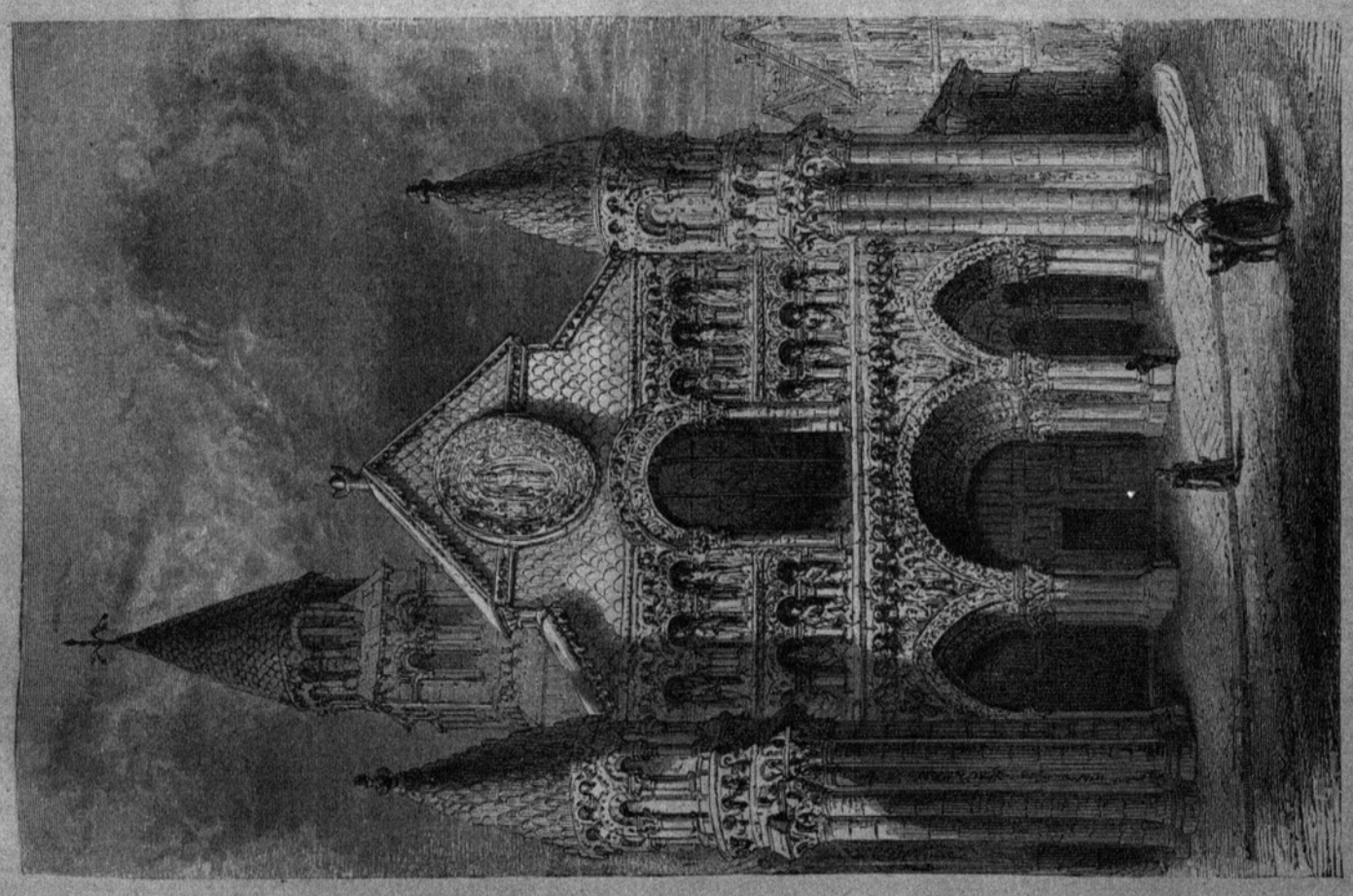
The patients' chapel is at a little distance from the main building, so as to give the inmates the opportunity of a walk to and from the services. The nave is 51 ft. by 25 ft., and the chancel, which has a semi-circular apse, measures 24 ft. by 20 ft.

The buildings are constructed of red brick-work, slightly relieved with stone and coloured brick dressings, and have been erected by Messrs. Mansfield & Price, of London, under the direction of Mr. C. H. Howell, of Lancaster-place, Strand, the architect of the New Surrey and East Riding Asylums.

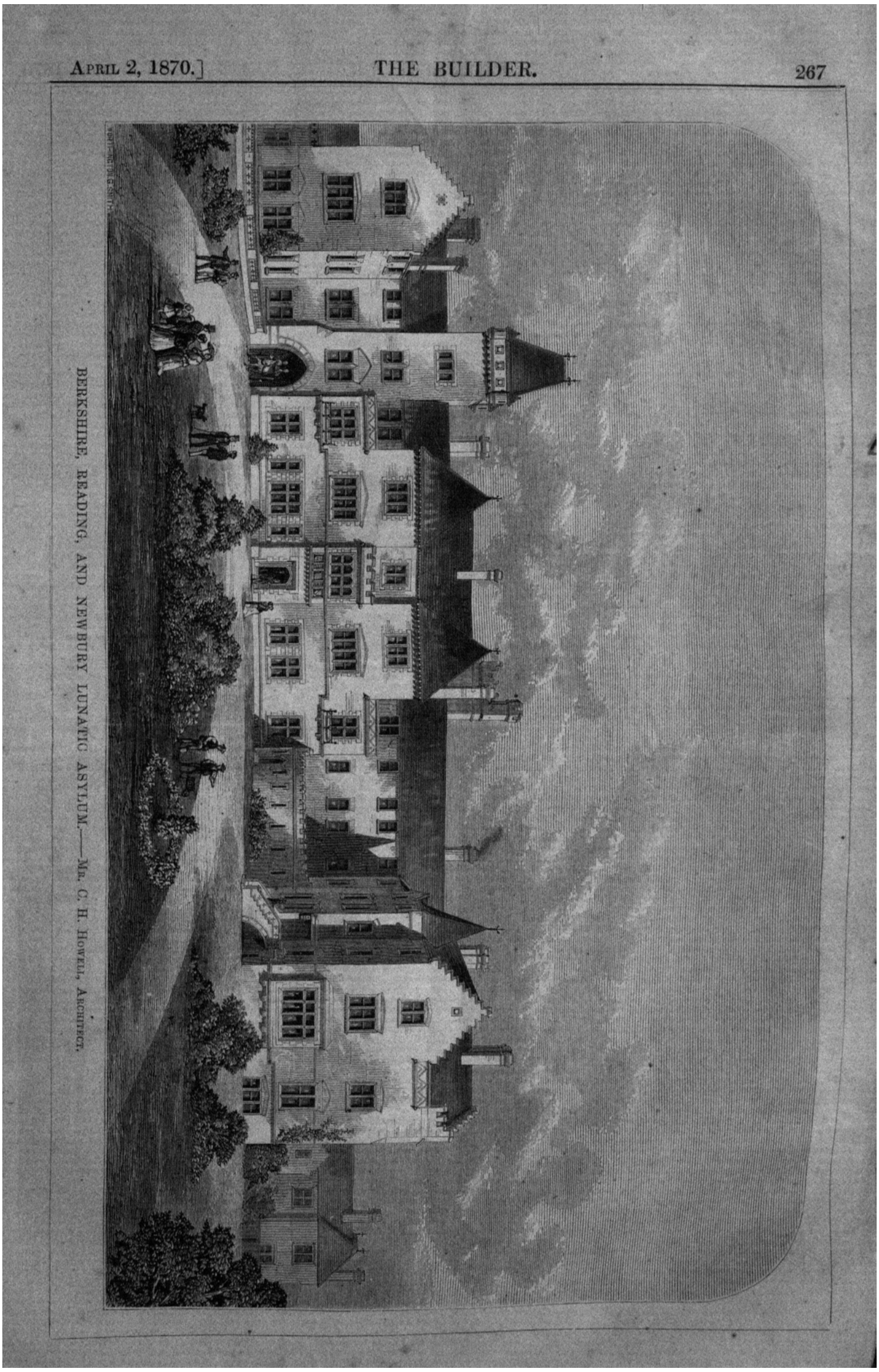


MR. JOHN GIBSON,

Architect of Dobroyd Castle, Todmorden.



THE CHURCH OF NOTRE DAME, POITIERS, FRANCE.



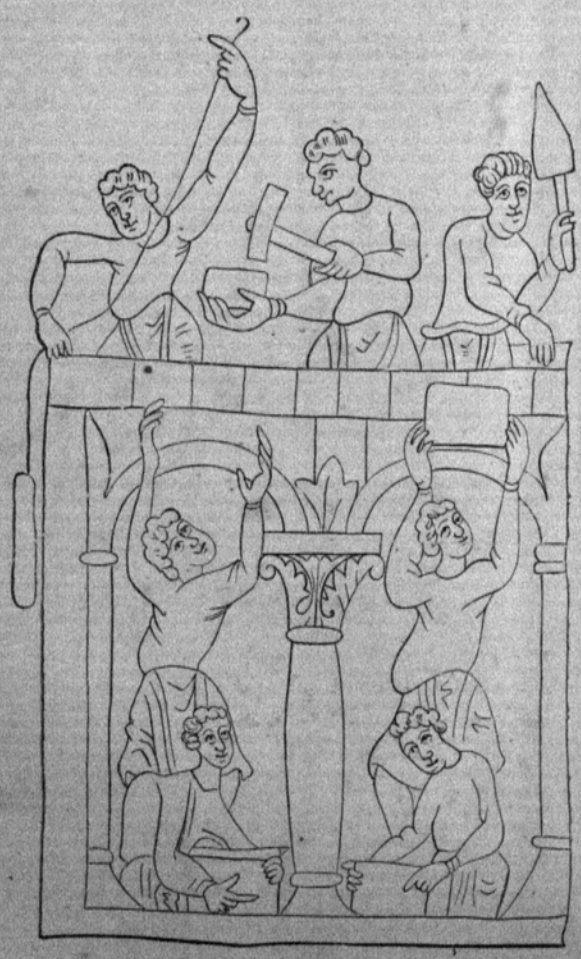
BERKSHIRE, READING, AND NEWBURY LUNATIC ASYLUM.—MR. C. H. HOWELL, ARCHITECT.

"THE ARTS IN THE MIDDLE AGES."

In our review of M. Paul Lacroix's work,* we mentioned the facsimile of a miniature, drawn with a pen, taken from a Bible of the eleventh century now in the Imperial Library, Paris. Although rude and showing the decadence that the art of drawing the human figure had fallen into, it is curious in several respects, and we reproduce it. We see the masons using the pick, the trowel, and the plumb-bob, as still employed: the entasis of the central column is also noticeable.

We are enabled to reproduce, too, the view of the entrance front of that remarkable church, Notre Dame la Grande, of Poitiers (France), with its multitudinous sculptured figures, borders, and scrolls, and where on each side of the semicircular-headed central doorway the pointed arch appears, probably induced by desire to render the side arches more nearly of the height of the central archway. Many years have passed since we saw this building, but we remember distinctly the interest with which it was viewed as an extreme elaboration of the plainer kind of what we call Norman work,—a phase of the style then new to us as a student. At the time we visited the building it had been long untouched, and was nearly black; and in place of the two columns that carry the arch of the great window in the centre, there were two interpolated canopied niches. These have been removed, and other work has been done. M. Lacroix puts under his view of the front "Twelfth Century." The body of the church belongs to the end of the eleventh, or beginning of the twelfth century, but the front in question we have reason to believe is scarcely older than the commencement of the thirteenth. Of the sculpture we wrote at the time,—"The spandrels beneath the first cornice and corbels contain a series of bas-reliefs, representing on the left-hand side of the spectator Adam and Eve, Nebuchadnezzar, some of the prophets, and an angel announcing to Mary the dignity of her coming child; and on the other side the meeting of the Virgin and Elizabeth, and the birth of the Saviour. Over the doorway is a circular-headed window, with a canopied niche on either side, which is an interpolation of later times. The figures in the arcades represent the apostles and two bishops. The lower part of the gable is inlaid with a series of small circular discs, and the upper part of it with squares placed diagonally: in the centre of the two parts is sculptured a large *vesica piscis*, containing a figure of Christ, and symbols of the four evangelists, namely, the bull, the angel, the eagle, and the lion."*

* See p. 238, *ante*.



CONSTRUCTION OF THE WOLF ROCK LIGHTHOUSE.

INSTITUTION OF CIVIL ENGINEERS.

On March 1st, Mr. C. B. Vignoles, F.R.S., president, in the chair, the paper read was "On the Wolf Rock Lighthouse," by Mr. Jas. N. Douglass.

Before entering upon the immediate subject of the paper, the author noticed briefly some other works which had been executed from time to time in the same neighbourhood, and with which it was intimately connected. These included a lighthouse on the Longships Rock, built of granite in 1795, and from which a catoptric fixed light was exhibited. Owing to the terrific seas to which it was exposed, the lantern, with its centre at an elevation of 79 ft. above high water of spring tides, was so much under water during stormy weather, that the character of the light could not be determined with accuracy. In its stead a granite column 110 ft. high was now being erected, to be surmounted by a first order dioptric light. In the same year, 1795, beacons were erected on the Wolf and the Rundlestone Rocks. These works were described, as well as a second beacon erected on the Rundlestone during the years 1841–3, the mast of which was on several occasions carried away and had to be re-instated. The dangers of the Rundlestone had since been marked by a bell buoy. An iron beacon was also erected on the Wolf Rock during the years 1836–40, and during these five years it was only possible to work on the rock for thirty and a quarter days of ten hours each. The mast of this had likewise to be renewed several times. The ironwork of this beacon, after an exposure of thirty years to the corrosive action of sea water, was in a good state of preservation, having been protected by a coat of red lead paint, renewed annually.

The Wolf Rock was stated to be composed of a hard, dark, felspathic porphyry. Its highest part was 17 ft. above low water of spring tides, which had a rise of 19 ft. The surface was rugged, rendering a landing upon it difficult. The depth of the water close to the rock was twenty fathoms, excepting on the south-east side, where a shoal extended for a considerable distance. In the year 1860, the late Mr. Walker was instructed to furnish a design for, and an approximate estimate of the cost of, the work. These having been approved, the author, who was then completing the Smalls Lighthouse, was appointed to carry out the work as resident engineer. The form and dimensions of the tower differed but little from those of the Bishop, the Smalls, and the Hanois. Its exact height was 116 ft. 4½ in., its diameter at the base was 41 ft. 8 in., and near the top, at the springing of the curve of the cavetto under the lantern gallery, the diameter was 17 ft. For a height of 39 ft. 4½ in. from the base the work was solid, with the exception of a space forming a tank for fresh water. At the level of the entrance door the walls were 7 ft. 9½ in. thick, whence they gradually decreased throughout the whole height of the shaft to 2 ft. 3 in. at the thinnest part near the top. The shaft of the tower was a concave elliptic frustum, the generating curve of which had a major axis of 236 ft., and a minor axis of 40 ft. It contained 44,506 cubic feet of granite, weighing about 3,296¾ tons; and its centre of gravity was 36 ft. 2¼ in. above the base. In consideration of the exposed position of the work, it was determined to dovetail each face stone vertically and horizontally, in accordance with the system suggested by the author's father, and first adopted at the Hanois Lighthouse. This method consisted in having a raised dovetailed band, 3 in. in height, on the top bed and one end joint of each stone. A corresponding dovetailed recess was cut in the bottom bed and end joint of the adjoining stones, with just sufficient clearance for the raised band to enter it freely in setting. From experiments made upon blocks of granite put together in this manner with Portland cement, it was found that the work was so homogeneous as to be as nearly as possible equal in strength to solid granite. In addition to increased strength, this system of dovetailing afforded great protection to both the horizontal and the vertical joints, against the wash of the sea when the work was first set. As an additional precaution, each stone of the first twenty courses was also secured by two bolts to the course below. The masonry, to the level of high water spring tides, was set in fresh Medina Roman cement, part of which was supplied from the Government Stores at Chatham, and part was manufactured by Messrs. Francis & Co., from whom the Portland cement was obtained for setting the work above high water. All the cement used in the work was mixed with an equal portion of clean, sharp, granitic sand, obtained from the stamps refuse of the Balleswidden Tin Mine, near Penzance. This sand was of excellent quality for such work, every grain in it being hard, angular, and rough. Salt-water was used for mixing all the cement required for the landing platform and for the solid portion of the tower; above this fresh water was used. The step ladders for ascending from floor to floor, and the partitions between the rooms and staircase, were of cast iron, and precaution had been taken to limit the use of wood for the fittings as much as possible, in case of fire. The doors, windows, and storm shutters were of gun-metal. The windows of the watch or service room, immediately under the lantern, were specially arranged for admitting air to the lantern, and for regulating the ventilation, in all ordinary weather. The supply of air was admitted by a valve at the upper part of the window, so as to pass above the head of the light-keeper on duty, and upwards through an iron grating surrounding the lantern floor.

The lantern was one of the cylindrical helically-framed type, designed by the author, and adopted by the Trinity House.

The total cost of the undertaking, including the lantern, the illuminating apparatus, cost of workyard at Penzance, vessels, and all incidental expenses, might be taken at 62,726*l*.

* "Pen and Pencil Sketches of Poitiers and Angoulême, with some Remarks on Early Architecture." By George Godwin.

THE OPERA HOUSES.

Covent Garden.—Mdlle. Sessi, who appeared on the opening night in "Lucia di Lammermoor," achieved considerable success, and promises an important future.

Drury Lane.—The auditorium of "Old Drury" is about to undergo a complete transformation to adapt it for the requirements of the New Opera Company, which, under the direction of Mr. Geo. Wood, starts as a rival to the Mapleson-Gye Company at Covent Garden. Drawings have been prepared by Messrs. Marsh Nelson & Harvey, architects; and the works placed in the hands of Messrs. W. Bracher & Son, who remodelled the house under the same architects for Mr. Mapleson, after the destruction of Her Majesty's Theatre in 1868.

ARCHITECTURE AT THE BIRMINGHAM SPRING EXHIBITION.

THERE are now two Exhibitions in the year in Birmingham. The spring show has just commenced, and appears a very good one. Turner, Cattermole, Callcott, Harding, Prout, and other eminent artists are well represented, and the local artists have likewise done very well. There is also an attempt at architectural drawing, but it is a feeble one. Four designs only are sent, and they are certainly not of extraordinary merit. Mr. E. Bindley sends his drawing for West Bromwich Schools, but it is poor Elizabethan, and makes one wonder how it came to obtain the commission. Mr. F. T. Proud's design for cottages is a superior production altogether, and is a pleasing specimen of Domestic Gothic, showing how a good effect may be obtained in skilful hands and by simple means. Mr. J. S. Davis's reredos is a flaming piece of composition. He cannot be complimented on any great success, though there are indications that he might do better if he were to take more pains. He has some idea of colour, but his figure-drawing is defective. I should certainly advise him to study figure-drawing for some time. His cathedral front is tame and commonplace. I fancy it would be a good thing if some local architect would deliver a course of lectures on architecture. I do not see why that art should be so neglected, and so many architects, too, as it is in Birmingham. T. G.

FALL OF HUSTINGS AT BRISTOL.

ON Saturday last the nomination of a member in Parliament for the city took place before the returning-officer, Mr. T. Proctor, high sheriff, upon hustings erected in the Corn Exchange. There was a large and very noisy gathering. While one of the candidates was speaking, the hustings upon which were the officials, candidates, and some hundred or more gentlemen, suddenly gave way, and a panic ensued. The candidates were thrown into each other's arms, and the reporters and other gentlemen fell amongst the shattered timber. One or two fainted and were carried out, and three or four received severe bruises. Many, of course, were much shaken, but happily none were seriously hurt. The accident is said to have arisen from the breaking of an iron bar. A large number of the corn merchants' desk-stands being under the hustings, the descent of the framework was checked, so preventing the consequences from being more serious. We are constantly urging the necessity for proper supervision by public officers of such constructions.

STATE OF EDUCATION IN THE GREAT TOWNS.

Two important reports have just been presented to Parliament, prepared for the Education Department by Mr. J. G. Fitch and Mr. D. R. Fearon, on the education of the poorer classes of children in Birmingham, Leeds, Liverpool, and Manchester. It appears by the report of the former gentleman that in Birmingham, the population from 3 to 13 is 83,125; the average attendance in inspected schools, 16,053; the number in attendance in other schools, 10,783. In Leeds, the population for 3 to 13 is 58,307; the average attendance at inspected schools, 12,422; and the attendance at other schools, 7,070. Thus the existing system of State aid, administered through the agency of the religious bodies, reaches 28,475 out of 141,432, or 20 per cent. of the total population of school age. Mr. Fearon, in reporting on Manchester, speaks most unfavourably of the uninspected schools, pronouncing 37 out of 81 as unfit. And as to Liverpool, he states that it is still worse. Mr. Fitch, in his report, describes the private schools in a similar way. "Too much religion" in the other schools seems to have been given by parents as a reason for patronising private schools. The reports are not so much intended to summarise the actual work done in the inspected or aided schools, as to show the character and quality of the instruction given in the uninspected and private schools for the poor. The reports are accompanied with maps of the four towns, showing by symbols the geographical distribution of the various classes of schools.

STEAM ROAD ROLLER FOR MAIDSTONE.

THE Local Board for Maidstone, who have been for some time considering the feasibility of having a steam road-roller for use on the roads of that town, have at last decided to purchase a 15-ton one of Messrs. Aveling & Porter, of Rochester. At the meeting of the Paving Committee, held on the 7th ult., the borough surveyor submitted a report on the steam-roller hired from Messrs. Aveling with the view of purchase, and which has been working on the roads of Maidstone for some weeks. From the calculation made by the committee, it appears that the cost of the roller, including a sinking fund to cover depreciation, will be about 80*l.* a year. The cost of stones spread by the Board on the Maidstone roads is about 1,500*l.* per annum; consequently, if the roller saves only 6 per cent. of the material used (and it is expected that it will save considerably more), then there will be a direct saving to the ratepayers by the purchase of the roller, independently of the indirect saving by the improved surface of the roads, and consequent reduction in draught, wear and tear of horses, carriage, and harness, with great increase of comfort to persons riding in carriages. It was stated by the surveyor that the total cost of working the 15-ton steam-roller per day was 15s. 6d., and the cost of working a 5-ton horse roller, with four horses, was 28s., or nearly double for the horse power alone.

COMPETITIONS.

New Workhouse, Cardiff.—We understand that Mr. T. E. Knightley, of London, by the request of the guardians, has examined and reported upon the competition designs sent, in January last, by thirteen architects, for a new workhouse in the above union, capable of accommodating 500 inmates. The referee's report will be considered by the guardians at their next meeting.

New Mechanics' Institute, Thornton. — In a limited competition, the designs submitted by Mr. Geo. Smith, of Bradford and Keighley, architect, have been accepted by the committee for the proposed new Mechanics' Institute and Working Men's Club, Thornton. The building comprises a reading-room, 22 ft. by 20 ft.; refreshment-room, 22 ft. by 20 ft.; library, 19 ft. by 18 ft.; and curator's house, on ground-floor; and two class-rooms and conversation-room on first floor. A lecture-hall will be placed in the rear, capable of seating 500 persons. The estimated cost is about 2,200*l.*, but it is intended to leave the lecture-hall out of the scheme at present, and proceed with the rooms most urgently required.

LAMBETH WORKHOUSE COMPETITION.

THE Board having called in Mr. H. Currey to assist them in their selection, have awarded the first premium to Mr. Parris; the second to Messrs. Giles & Biven and C. Foulsham; and the third to Mr. R. E. Tyler.

ST. PANCRAS PARISH AND THE METROPOLITAN BOARD OF WORKS.

SIR,—Will you favour me with a little space to dilate upon a grievance which casts a slur upon that all-important,—I may say omnipotent,—body who hold supreme sway over this vast metropolis, viz., the governing power at Spring Gardens. For the better information of your readers, I may observe that a certain locality known as "Gospel Oak Fields," Kentish Town, in the northern part of St. Pancras, well built upon, and possessing, in close proximity, two railway stations, a church, chapels, schools, &c., and other requisites for a populous neighbourhood, is to be seen a plague-spot, a disgrace to civilisation, and an eye-sore, which has obtained the *sobriquet* of "Mud Island," its name being "Lismore-circus," or it is so called, it being the shape; but its interior is a quagmire, a receptacle for filth and other excrement, to the disgrace of the authorities. It has been ascertained from the solicitor to the parish that it is no man's land, and comes under the jurisdiction of the higher powers.

I will briefly state for public information what steps have been taken in the matter, and leave all to judge. This neighbourhood has rapidly increased; and by such influx it was deemed expedient, about ten months ago, to memorialise the vestry of St. Pancras, and a very numerously-signed petition from freeholders, leaseholders, and inhabitants on the subject of the circus was presented to that Board, and received marked attention, and by them in the usual course was referred to the local Board of Works at Edward-street, for that body to take it into their consideration, and report thereon.

This was accordingly done, and the report was brought back to the vestry, with a recommendation that it be referred to the august body at Spring Gardens.

After a lapse of many weeks, and finding no notice had been taken; through the indefatigable exertions of some of the vestrymen, one in particular, it was stated by one of the representatives at the Board of Works for this parish (Mr. Silas Taylor) that it had been referred to the "Parks and Open Spaces Committee" to view the same. Time passed, no view. Again, a little more agitation; and at length, about five weeks back, I understand the Committee did favour this pestilential spot; but I regret to say no report has yet come to hand.

Now, sir, St. Pancras contributes largely to all metropolitan improvements,—the parks, the vast City improvements, &c.; yet, forsooth, when we ask for a matter of a few hundred pounds to improve our parish, in two or three really necessary localities,—to wit, this circus, the bridge crossing the canal near the York and Albany, and the one in the Chalk Farm-road,—all we get is to be treated with contumely, despite the immense contributions levied upon the ratepayers of this parish.

I beg to apologise for the length of this letter; but as an owner of property, in common with many others in this neighbourhood, we are great sufferers through the apparent neglect of the Board; whereas, for a proportion of money, "Mud Island," in lieu of being a "plague-spot," would become an oasis, and make the neighbourhood pleasant, healthy, and habitable.

A RATEPAYER
(Ward No. 1, St. Pancras).

LANDLORD AND TENANT.

Bowes v. Law.—This case was tried in the Vice-Chancellor's Court before Sir R. Malins.

Mr. Bowes, the plaintiff, is the owner of a mansion-house and grounds at Frickley, near Doncaster, which abut on a road called Carlton-terrace. On his acquiring his property by purchase, the vendor, Mr. Alison, entered into a covenant that no buildings except dwelling-houses of not less value than 200*l.* should be built on two plots of land on the other side of Carlton-terrace. These lots were subsequently acquired by Mr. Law, the vicar of Frickley, and thrown into his garden. He built a wall 8½ ft. high to inclose it from the road. In one place the wall was raised to 11 ft. high, and a vinery with a sloping glass roof put up against it. This was a suit to obtain a mandatory injunction to compel Mr. Law to remove his wall and his vinery as being buildings within the meaning of the covenant.

Mr. Kay, Q.C., and Mr. Dewsnap appeared for the plaintiff; Mr. Amphlett, Q.C., and Mr. Kekewich for Mr. Law; and Mr. Spencer Butler for Mr. Alison.

The Vice-Chancellor said the wall was not within the covenant, but the vinery was; but as it had been built and no substantial injury was incurred by the plaintiff, he should not grant an injunction, but merely declare there had been a breach of the covenant, assess damages at 40*s.*, and give the plaintiff the costs of the suit.

CASES UNDER METROPOLITAN BUILDING ACT.

RUINOUS BUILDINGS.

MR. P. DE KEYSER, the proprietor of the Royal Hotel, Chatham-place, Blackfriars, was summoned by the Commissioners of Sewers, before Alderman Stone, to show cause why he did not do certain works to his hotel, in order to make the building safe for the public.

Mr. Under-Sheriff Baylis said that the district surveyor, who was appointed by the Metropolitan Board of Works, had given the Commissioners of Sewers notice that the defendant's building was in a dangerous condition, and required that certain walls should be pulled down and rebuilt in cement. The commissioners had given notice to the defendant to do that work, and he had neglected to comply with their requisition.

Mr. Edward Power, the district surveyor for the southern division of London, said that a policeman, or somebody else, called his attention to the dangerous condition of the defendant's premises, and he surveyed them, and reported to the Commissioners of Sewers that the structure was dangerous, and that the sunken part should be cut out and replaced by sound stock bricks. The structure was then and was still in a dangerous state.

In cross-examination he maintained that the structure was dangerous, but he did not know how long it might stand, whether for one, two, ten, or twenty years.

For the defendant it was contended that the building was in no way dangerous, and that it was under the continual supervision of the surveyor of the Metropolitan Board of Works, the surveyor of Bridewell Hospital (to whom the property belonged), and Mr. Gruning, the surveyor for Mr. De Keyser; and that every possible precaution was taken to secure the property from any accident. It was true that a crack had shown itself in the house, but it had been there for nine or ten years, and four years ago a fillet of cement had been run round the house to see if any further settlement took place, but during the whole of that time it had not settled one bit. The whole of these proceedings, it was contended, were malicious on the part of Mr. Power, because Mr. De Keyser had complained against him to the Commissioners of Sewers.

Mr. Gruning and Mr. Donaldson, surveyors, were examined, and positively denied that the structure was dangerous.

Other evidence was about to be called, but

Alderman Stone stopped the case, and said that he was satisfied the building was not a dangerous structure, and therefore he dismissed the summons. He, however, thought the case ought to be inquired into elsewhere.

CHURCH-BUILDING NEWS.

Headingley.—The church here has been re-opened, having been closed since August last, in order to permit of alterations and improvements which have been made in the fabric. The alterations and additions are briefly these: a new organ chamber and vestry have been built, and this arrangement has permitted of the organ and choir being brought downstairs; a new oak reredos and communion-rails have been put up; an oak pulpit and oak lectern erected; the chancel has been re-tiled, and the tall pews have been cut down. The roof formerly was mainly composed of plaster. This has been removed, and suitable woodwork introduced. A new heating apparatus has been provided, and considerable attention paid to ventilation. The whole of the works have been carried out under the superintendence of Mr. Chas. Fowler, architect, Leeds; and the reredos, pulpit, lectern, &c., have been executed from his designs.

East Horsley.—The parish church of East Horsley, which, for some months past, has been undergoing restoration, has been re-opened by the Bishop of Winchester. On the same day a mausoleum for the family of the Earl of Lovelace was consecrated by his Lordship. The church is an ancient structure,—in fact, one of the oldest in the country; and having fallen into a dilapidated condition, the nave and side aisles have been pulled down, with the exception of the north wall, and re-erected as nearly as possible on the original plan. Besides the north wall, in which are inserted several monuments, as well as one or two ancient windows, containing escutcheons in painted glass, the only portion of the building that has not been renovated is the square tower, covered with plaster. The restoration has been carried out by Messrs. Swayne, of Guildford, builders, from designs by Mr. H. Woodyer, architect.

Newark.—At a meeting of the committee appointed to carry out the necessary preliminaries for the proposed church at the north end of the town, the reports from the several collectors were received. The amount promised was sufficient to warrant the committee in proceeding further in the undertaking, and it was determined to accept an offer made by the trustees of the Duke of Newcastle to sell any quantity of land they may require for their purpose in North-gate, now occupied as gardens. The price is to be 3s. per yard, which is below the market value. Architects residing in Nottinghamshire and Lincolnshire will be invited to compete. It is intended to erect a building to accommodate 600 people, and capable of extension at a future time, at a cost, in all, not exceeding 3,000*l.*

Fulborn (*Cambridgeshire*).—The parish church has been re-opened, after having been restored. The church had got into a very dilapidated state. The windows in the tower, which were blocked up, have been re-opened and renewed. In the nave a decorated roof has been placed, almost a copy of the old one. The chancel arch is new. The chancel is 3 ft. wider at the west than at the east; it also leans some inches to the north. The chancel is lighted by lancet windows, which would have an improved appearance if filled in with coloured glass; the east window especially looks very bare. Seats have been retained, but the majority of them have been replaced by oak benches, with carved panels. The roof is entirely new, and the floor is paved with Staffordshire tiles. The total cost of the work has been about 4,000*l.* Mr. Blomfield, of London, was the architect; and Mr. R. Tooley, of Bury St. Edmund's, the contractor.

Shefford.—The new church of the Holy Innocents has been consecrated. The building is in the Early English style. It is a simple church, without aisles, but with arch dividing the chancel from the nave. On the south side is a vestry. The tracery and door-jambs are of Bath stone, and the exterior of flint, interspersed with stone bands. A bell-cot surmounts the west end, built for two large bells: at present there is but one small one. The whole is finished completely with Bath stone. The chief entrance is at the west end, over which an oak porch is raised, the gift of the Rev. J. L. Randall, rector of Newbury. The chancel is apsidal; at the curve in the interior is an arcade of seven arches, carried upon banded shafts of grey Bath stone. There are in addition a stone sedilia, a piscina on the north side, and credence-table. At present there is no reredos, but arrangements are made for one to be fixed hereafter. The apse is lined with a dado of tiles, from the works of Messrs. Maw & Co. The chancel floor is laid with fancy tiles, and the body of the church is also paved with tiles throughout. The pulpit, which is scarcely finished, is of oak, and the gift of Mr. Gower. A number of steps between the nave and the chancel give elevation to the holy table at the east end. The nave, in the absence of fixed seats, is supplied with chairs. There is a good deal of carving in the chancel, the caps, shafts, and corbels of the chancel being elaborately worked. The glazing is of rough cathedral glass, and in patterns. At present there is no stained glass. The cost of the work has been about 1,500*l.* The architect was Mr. C. F. Hayward, of London; and the contractor Mr. T. Wooldridge, of Hungerford.

Brackley.—The newly-restored chapel of St. John and St. James has been re-opened for divine service. During the past twenty-eight years, the building, formerly the chantry of the hospital, has been allowed to fall into decay, and, from some want of harmony between the inhabitants of Brackley and the owners of the property (the president and scholars of Magdalen College, Oxford), nothing was done to restore the ancient edifice to its proper use. Liberal aid, however was given by the college authorities, so that in a short time 2,282*l.* 2*s.* were collected from different sources, of which sum 122*l.* were devoted by Magdalene College (in addition to 200*l.* for the interior works) to the exterior renovation, which included new west doors (with wrought-iron hinges), new internal rere arch, the metal-work about the walls and roof, drainage, restoration of the tower, and stone crosses to the eastern and western gables. The total also includes a gift of 100*l.* from the Feoffees of the Brackley Charity Estate. The works were placed in the hands of Mr. C. Buckeridge, of Oxford and London, architect, and the edifice has been restored to something of its ancient splendour.

Shouldham (*Norfolk*).—The parish church of Shouldham has been re-opened after restoration, the chancel and vestry being entirely new. The old chancel was almost entirely rebuilt about 1840, in the style of the period. The present erection, which supplies the place of the other, is in the Early Decorated style, the materials employed being flint and Casterton stone. The reredos is carved and coloured, a marble cross being the principal feature in the composition. A low chancel-wall separates the more sacred portion of the building from the nave, and on the south side this is extended outwards, so as to form a pulpit. The vestry is large, and is on the north side. The church is lighted by three coronæ, illuminated by the Brighton lamp. The entire cost is 1,307*l.* 7*s.* 5*d.*, of which 1,073*l.* were contributed by Sir Thomas Hare, bart., of Stow Hall, and the remainder by the parish. The architect was Mr. R. J. Withers, of London; and the contractor, Mr. Brown, of Lynn. The decoration of the reredos was done by Messrs. Bell & Almond, of London.

DISSENTING CHURCH-BUILDING NEWS.

Claremont.—The Baptist new chapel on St. George's-road has been opened for divine service. The building is in the Italian style of architecture, and was designed by Mr. George Woodhouse, of Bolton, architect. The principal front is situate in St. George's-road, and is set back 15 ft. from the line of street. The main walls are built of pressed bricks. On each side of the ground-floor story are seven large windows, with arched segmental reveal arches and jambs; the upper windows have semicircular heads; and at the springing of the arches in front and sides are built bands of black brick forming distinctive horizontal lines. The base course of the walls is built of pitch-faced wall stones, quarried from the neighbourhood, and the dressings are Yorkshire stone. The gallery front and framing has two circular ends, the former with pitch-pine framed elongated panels, with mouldings, cornice, and mahogany book-board. Iron columns, with capitals, support the gallery, which is divided into five pews at each side and aisle. At the north end is a children's gallery, which will seat 200. The framing to the gallery is similar to the body of the chapel, but of common pine. All the woodwork is stained and varnished; all the floors throughout are boarded; and the windows are fitted with sliding sashes for external ventilation. The ceiling is divided into central bays, with plain border and dentil cornice and mouldings. Five sunlights, gilded, are suspended from the ceiling, and a number smaller in size under the gallery give light to the whole chapel. The great width of the edifice is spanned by a double queen-post roof, and covered with blue Bangor slates. Three vestries are provided at the back part of the ground floor of the chapel, together with a general staircase. The nature of the site has enabled the architect to provide a large and commodious schoolroom, and he has introduced a mezzanine floor and balcony, with sliding sash-front. This arrangement gives to the committee nine separate class-rooms for the teaching of adults. The whole of the rooms are lighted by external windows, and the class-rooms are fitted with fireplaces. A fire-proof room is provided, and hot-air heating apparatus has been fixed by Whittaker & Constantine, of Bolton. The chapel and offices will cost about 5,500*l.* The contractor who has executed the work is Mr. John Robinson, jun., of Hyde.

Normanton.—The new Congregational Chapel at Normanton is now completed and opened. It is seated for about 200 persons, and has in communication with it, by means of sliding shutters, a school-room, capable of accommodating nearly 100 more. It is designed in the Early English style of architecture, the walling being red brick with dressings of Little Eaton stone. The side elevations have trefoil-headed windows arranged in couplets. The end bay on one side is occupied by a timber-framed porch, and on the other by a high-pitched gable with a two-light plate traceried window. The front elevation has a high-pitched gable with a three-light traceried window, and a timber-framed and slated bell-turret. The pewing is open-framed, stained and varnished. The cost has been about 500*l.* The architect was Mr. Tait, of Leicester.

Leigh.—A new Primitive Methodist Chapel has been opened for divine service in Bradshawgate, instead of the unsightly erection which had formerly served the Primitive Methodists of Leigh to worship in. The new chapel is in the Norman-Gothic style. The original design of Mr. Pritchard, C.E., the architect, was not strictly carried out in all its details, much of the purely ornamental work having to be abandoned. The building is constructed mainly of brick, with dressings of Edge Fold stone, and of coloured bricks for the doors and windows. The front facing Bradshawgate is composed of pressed brick, tuck pointed. In the centre is a large ornamental Gothic window. The form of the interior of the chapel is amphitheatrical, with a semi-chancel at the south end, containing a panelled Gothic rostrum, and also supplying accommodation for the choir. The roof is on the king-post principle, with segmental collars, secured with wrought-iron straps, bolts, and plates, and ornamented with sunk and perforated panels. The acoustic properties of the chapel are said to be good. The chapel is capable of seating between 400 and 500 persons, and underneath is space for a school-room, vestry, and three class-rooms. The plot in front of the building will be planted with shrubs, &c. Enclosing the front space is a railing, which has been prepared from a design of the architect. The entire cost of the building is between 1,600*l.* and 1,700*l.* The builder was Mr. Thomas Bethell, of Earlestown.

Grays.—The foundation stone of a new chapel for the Primitive Methodist community in this place has been laid. The building will be situate within easy reach of all parts of the town. It is computed to cost nearly 1,000*l.*, of which about 300*l.* are yet required; and the builder is Mr. Larkin, of Orsett.

Horncastle.—The new Wesleyan chapel, opened at Horncastle, is built in the Italian style of architecture. Its external dimensions are 96 ft. in length, 58 ft. in width, and 35 ft. in height. The walls are built with brick, in two colours, having Bath stone dressings. There are three entrances in front, with glazed screens in the vestibules. The body of the chapel contains 430 sittings, 125 of which are free. There are four side entrances and staircases leading to the gallery, which is semicircular at each end, and besides an orchestra, contains 532 sittings, 142 of which are free. In the rear of the building there is a band-room, 53 ft. by 17½ ft., and five class-rooms and vestries, all warmed by open fires, and lighted with gas. The chapel is warmed by hot-water pipes, and lighted by two large sun-burners, and eight pendants under the gallery. All internal woodwork is stained and varnished, except the pulpit and gallery front, which are painted white and gold. The windows are glazed with enamelled glass, having ornamental coloured borders. The cost will be about 4,500*l.* Mr. William Waddington, of Burnley,

Lancashire, was the architect; and Messrs. Walter & Hinsman, of Horncastle, were the builders.

Woodgreen (*London*).—It is proposed by a congregation of Wesleyans, who have hitherto occupied the Mission-room, Woodgreen, to erect another place of worship. The site chosen is situated in the Bounds Green-road, near the Fishmongers' Almshouses. The cost will be about 4,000*l.*, and it will be capable of holding 1,000 persons. The building will contain a large room at the back for Sunday-school purposes. It is intended at first to erect only a portion of these buildings.

Books Received.

The Rosicrucians: their Rites and Mysteries. By HARGRAVE JENNINGS. Illustrated. London: Hotten. 1870.

IN 1858 the author of this book published a work entitled "Curious Things of the Outside World," in which his peculiar views and deductions as to Rosicrucianism were hinted at; but his present work is quite a new one, forming what the author calls "a history of the alchemical philosophers, written with a serious explanatory purpose, and for the first time impartially stated since the days of James I." Mr. Jennings does not wish to commit himself to the strange doctrines of the Rosicrucians, but merely to be held as their historian; and yet he speaks as if he were bound not to reveal their deepest secrets; and, speaking at them, in his preface, as if they were an existent brotherhood, he assures us that "no student of the occult philosophy need fear that we shall not most carefully keep guard—standing sentry, so to speak—over those other and more recondite systems which are connected with our subject;" and assuredly, although he quotes some of their mystical and obscure dicta, he does not reveal to us their meaning,—a fact which admits of more explanations than one. Nevertheless he tells us, as we have said, that his present work is written "with a serious explanatory purpose."

Rosicrucianism is a very curious subject, regarding which, little except, perhaps, what the Count de Gabalis has "revealed," has been written, or is known, in modern times. This work, therefore, cannot but interest many readers. It gives an account of the ancient fire and serpent worship, and attempts to explain "mystic symbols represented in the monuments and talismans of the primeval philosophers." Many of these symbols are very curious; but just as Mr. Jennings takes care to let his readers know that he does not identify himself with the doctrines of the Rosicrucians, which, indeed, he does not reveal, so must we be excused from identifying ourselves with his "serious explanatory purpose," all the more especially in regard to what he says on architectural subjects.

The illustrations are very numerous (upwards of 300, it is said), but not well arranged. They form, together with the text, a very curious volume, the materials of which must have cost Mr. Jennings great and long-continued labour to collect; but it is to be hoped his loyalty to the Rosicrucian or other occult brethren or friends will enable him, in another edition, to digest and arrange his subject more relevantly, and explain himself a little more clearly, than he has yet done.

VARIORUM.

"A Plea for the Compulsory Teaching of the Elements of Physical Education in our National Elementary Schools. By Mathias Roth, M.D. Groombridge & Sons, Paternoster-row." The claims of physical education to rank with reading, writing, and arithmetic are pretty strong,—always, of course, with due respect, we hope, to the poor little brains that are busy in acquiring physical material, as well as physical and all other sort of education. The aim of this pamphlet is to induce the Council of Education to rule that a school shall not be considered efficient unless physical education, including sanitary knowledge, forms part of the regular and daily instruction; and that no Government aid should be given to any school unless the inspector reports sufficient progress in this educational branch.——"The Educational Condition and Requirements of one Square Mile in the East End of London. Bell & Daldy." This Supplement to the Journal of the Society of Arts has been prepared, at the request of the council, by Mr. George C. T. Bartley. It relates to the district about Bethnal-green, Kingsland, and Haggerstone. The district contains 17 schools receiving Government grants; 2 schools inspected by Government, but receiving no grants; 27 schools not inspected by Government; 8 schools proposed to be enlarged; and two proposed new schools. The estimated population of the district is 130,000; number of houses, 17,589; estimated number of children between 3 and 12 years, 30,160; number at school, 10,898, of which number 5,618 are in Government inspected and aided schools. The estimated number of children taught to read, write, and do arithmetic fairly well is, say, 4,000; the estimated number growing up more or less in ignorance, 19,262; the estimated cost of new school buildings and land absolutely necessary if these are to be educated, 60,000*l.*; and the annual cost of keeping up these schools will be 16,000*l.* In the district referred to there is a public-house or beer-house for every 53 private houses, and for every 249 adults. In all there are 165 public-houses and 166 beer-houses, and the estimated amount annually spent in them by very poor people is not less than 450,000*l.* One penny out of every eight in this sum would more than build all the new schools required, and one in twenty-eight would keep them going.——"Registration of Correspondence: a new System applicable to large Offices, &c. By R. W. Lapper, Euston Station. Waterlow." This is an important matter in all large offices, and the improvements here suggested cannot fail to be of interest to all concerned in them. The author says, that under his plan any responsible registering-clerk could easily control half a million of letters per annum, so as to be equal to any emergency.——"The Uses of Plants in Food, Arts, and Commerce. By Ellis A. Davidson. Cassell, Petter, & Galpin." This little book contains a series of useful and interesting reading-lessons for schools, on such subjects as the bread-plants, breakfast-plants, spices, dyes, and so on.

Miscellanea.

St. Peter's Mission Hall, Worcester.—This building, erected at the sole cost of Mr. J. D. Allcroft, has been opened. The hall is situated in Wyld's-lane. The upper room is designed for division into two parts, to furnish a reading-room for working men, and another for the senior scholars of St. Peter's boys' Sunday School; and in this building will be held short services for the poor, lectures, Bible classes, mothers' meetings, reading-rooms, classes for general instruction, and a night school. The Mission Hall is of Gothic design, three stories high, with three corbelled and coped gables, and carved finials, surmounting the front. Brick and freestone are the materials used. Each story has large windows with stone mullions and transoms, label mouldings and strings, the uppermost tier of windows being pointed, and the centre one traceried. The entrance is a pointed archway. The large room on the ground floor is 45 ft. by 25 ft., and 15 ft. high; those on the first and upper floors are of the same proportions, but the latter is open to the roof, being 25 ft. in height. There are in connexion with these apartments class and other rooms. The floors are framed with trussed transverse beams, which divide the ceilings below into panels, having plaster mouldings intersecting with those of the walls. The roof is covered with blue and red tiles, having open metal ridge cresting. Ventilation is provided for by means of hopper casements in the windows, the extractions being through separate wall flues having gratings below the ceilings, and the flues communicating with principal vertical ones constructed in connexion with the chimney shafts. The warming is by open fire-places. The entire cost of the building, including site, was about 4,000*l.* Mr. Henry Rowe was the architect; Mr. O. Wilson was the contractor; and Mr. Brock the gas-fitter.

The Late George Cattermole.—A committee of gentlemen, consisting of Messrs. W. P. Frith, R.A., William Evans, S. C. Hall, Edward Franks, and Tom Taylor, are exerting themselves to procure funds for a monument to the late George Cattermole, to be erected in the cemetery at Norwood, where he is buried. They appeal to the art-patrons who possess examples of the artist and appreciate his genius, and to his brother artists "who have been more fortunate than he was."

Society for the Encouragement of the Fine Arts.—On Thursday, 24th ult., Mr. James Dafforne gave a lecture on "The Poetry of the Arts." Mr. W. C. Hazlitt was in the chair. The lecturer said that the poetical in art had for its object to interest the feelings by means of form and colour, by graceful and fitting words, so that, whilst satisfying the intelligence, it teemed with life and beauty. High art he had the greatest respect for; but greater for that true art which rendered the artist a connecting link between the living and the dead. After some remarks on Egyptian, Grecian, and Roman art, and on their slow progress towards maturity, Mr. Dafforne proceeded to show how Christianity had revolutionised art, noticing its revival on the establishment of the Papal throne, and the character impressed upon it by Cimabue and Giotto, Michelangelo, Perrugino, and Raffaelle. Next adverting to the poetry of the builder's art, with a passing tribute of respect to the labours of the old monkish artists, he eulogised the poetry of the pencil of Turner, Wilkie, and Martin, dwelling on the poetical sentiments evoked by "The Fighting Téméraire," "The Distraining for Rent," and "Belshazzar's Feast;" and he concluded a lecture, poetical as well in subject as in treatment, with some reflections on the intense thought and study required to produce a work of genius, and on the deep sense of gratitude that was due to the artist.

The Health of Eastbourne.—A Government inquiry has been taking place at Eastbourne as to the alleged prevalence of fever there and its causes. Dr. Thorne's report shows that in Eastbourne there are the conditions usually found in towns where typhoid fever prevails; polluted water-supply to parts of the district, water-closets without water, sewers badly ventilated, house cisterns communicating directly with the sewers by means of the waste-pipes. The badness of the ventilation of the drains is the result of endeavouring apparently to cram as much powdered charcoal as possible into the receptacles made to hold it in the ventilators; thus turning it into an effectual stopper of the ventilators. The result must naturally be that the sewer gas makes its escape into the houses. The inspector expresses doubts whether the charcoal ventilators can be safely continued.

Stanley Cottage Hospital.—The corner-stone of a cottage hospital for the thriving mining village of Stanley, situated about three miles from Wakefield, has been laid. The origination of the scheme is due to Mrs. Charlesworth, of Hatfield Hall, but it has met with general support. The site of the hospital is on the Stanley-lane End-road, behind the church, and in close proximity to the schools, and commands a fine view along the valley of the Calder. The proposed building is in the Gothic style of architecture, and is intended to consist of six rooms, besides cellars, but is capable of enlargement. The cost, including furnishing, is estimated at 450*l.*, the whole of which sum has been raised.

Rochester and Chatham.—The arrangement on the part of the Earl of Jersey and the corporation of this city for the lease, by the latter, of the castle and castle grounds for public gardens and parks, has been finally made. The corporation are to expend 2,000*l.* in laying out the castle gardens and grounds for the purposes of a public park for the use of the citizens. Notices have been served on the tenants in occupation. The plans and specifications for the proposed new corn exchange to be erected by the corporation have been prepared by Messrs. Flockton & Abbott, the architects. The corporation have obtained possession of the whole of the buildings and property adjoining the present corn exchange, on which the new edifice will be erected, and these will shortly be demolished.

Sash-Fasteners.—We spoke recently of a sash-fastener made to prevent the window being surreptitiously opened by a knife, or similar instrument, working between the sash-bars. Messrs. Hobbs & Hart have sent us one which, in addition to effecting this, tightens the sashes for greater security. The sliding of a knife between the sashes to force the catch back, which is now so often practised on the ordinary sash-fasteners, is here prevented by a small underlap covering the joining line. There is a smaller catch to tighten up the locking action of the entire window, as well as to prevent rattling. Of the good effect of the latter part of the arrangement we are not quite sure. The price of the article is 3*s.*

The Commercial-road Tramway.—Now that the question of tramways for the metropolis is exciting so much interest, attention is again being turned to the granite tramway which has been for forty years in use in the Commercial-road. It extends from the West-India Dock gates to Whitechapel, two miles in length, and has been of great use. The road, however, is a wide one, and there is only a single line of tramway. The granite is now laid on concrete. It was designed and carried out by the late James Walker, F.R.S., at one time president of the Institution of Civil Engineers, but since 1850 it has been under the charge of his assistant and pupil, Mr. J. B. Redman, of Westminster. During the last twenty years it has been twice raised, re-dressed, and re-laid in concrete. Mr. Redman states that the tramway is in as efficient a working state as it was twenty years since. There are several kinds of granite in it; and the result of experience with these is, that an inch of Aberdeen lasts ten years; of Herm, twenty years, Guernsey, forty; and cast iron, cold blast, fifty to sixty. Aberdeen granite requires 700 tons to crush 1 ft. super.; Herm, 900 to 1,000 tons; and Guernsey still more.

Island-making the Order of the Day.—The example of M. Ferdinand de Lesseps in Suez has produced more than one imitator. Every isthmus in the civilised world seems destined to have its throat cut. Panama has long been doomed; Corinth is a mere matter of time; and before long we may have to correct our geographies by describing Spain as an island. The last is a magnificent scheme, and to cost more than did the Isthmus of Suez. The project is for a canal from the Bay of Biscay to the Mediterranean, through 100 locks, the ships being towed by locomotives on the banks at four miles per hour. As for the Isthmus of Corinth scheme, advices from Greece state that the whole kingdom receives with a lively satisfaction the plan for cutting through the isthmus; and the initiative taken on the subject by King George is appreciated as one of the happiest ideas that could be realised. The *International*, we may here add, states that the King of Prussia has decided, with the advice of the Council of Ministers, on carrying out the projected canal from the Baltic to the North Sea. The works are to commence next year, and may be finished in 1878.

Towns' Sewage.—A deputation consisting of members of Parliament, mayors and town clerks of boroughs, and other local authorities in England, have waited upon Mr. Bruce, the Home Secretary, to urge upon the Government the necessity for early legislation to protect rivers and streams from pollution by towns' sewage; and, in the event of delay to receive the final report of the Rivers' Commission; then, that a short Bill be introduced to give temporary relief to local authorities executing sewage works, until a general measure be passed for the protection of rivers. The deputation was introduced to the Home Secretary by Col. Akroyd, M.P. for Halifax. Mr. Bruce assured the deputation that he considered the representations made were most important, and although he could not pledge the Government himself, he would confer with his colleagues, and acquaint the deputation of the result of such conference without delay. Sir William Dennison, the chief of the Rivers Commission, was present during the interview.

The Thames Embankment and its Railway.—A station is to be erected at the bottom of Norfolk-street for the railway. It is expected to be ready for public traffic in less than three months, the whole of the new thoroughfare from the Mansion House to Westminster Bridge to be completed by August. There is to be a station at the end of New Earl-street, and from this point the line passes under the street into Cannon-street, and thence, it is intended, to a City terminus near the Mansion House. Between the Temple Gardens and Blackfriars Bridge the line is close upon the low level sewer, and extraordinary precautions have been found necessary.

Kitchen Boiler Explosions.—Three hot-water engineers have sent us particulars of their several patent arrangements, by means of which they believe explosions are rendered impossible. We must leave them to make their inventions known in the ordinary way.

Proposed New Building Act.—The Metropolitan Building Bill, brought into the House of Commons by Sir W. Tite, has been undergoing some trifling modification, which has delayed the printing of it.

Opening of the Royal Chapels in Westminster Abbey to the Public.—The dean and chapter have resolved, by way of experiment, to set apart every Monday for the free admission of the public, not only as on other days to the nave and transepts, but to the Royal chapels, between the hours of service, from 11 a.m. to 3 p.m., and again from 4 p.m. to the closing of the doors at 6 p.m., during that portion of the year when the longer days admit of this arrangement. Stationary guides will be appointed to each of the Royal private chapels, to protect them from injury and explain objects of interest; and if the experiment should succeed, and if persons of means should be disposed to assist the chapter, the free access may be extended to other days. The new arrangements have already come into operation.

Decorations of the House of Commons In reply to Col. Sykes, in the Commons, Mr. Ayrton said there was considerable difference of opinion on the subject of the mosaic picture now placed in the Central Hall, some persons thinking it extremely beautiful, while others held a directly opposite opinion. Under these circumstances, a great deal of consideration would be required before any further expenditure would be incurred, and the House would have an opportunity of expressing an opinion before any further works were undertaken. Mr. Poynter was now engaged on the pictures for which he had received commission, but no further works in mosaic would be ordered. As regarded light for the pictures, the question was one that would involve much cost, and therefore required a great deal of consideration.

Sussex Archæological Society.—A general meeting of the Sussex Archæological Society was held on the 24th ult., at the Barbican, Lewes Castle, the Rev. H. Campion in the chair, when some amendments were made in the rules whereby the Editorial Committee ceases to exist and the Finance Committee is enlarged. The Rev. E. Turner, of Maresfield, was appointed editor of vol. xxii., and the Rev. W. de St. Croix was appointed secretary of committee, and other officers of the society were re-appointed. It was decided that the annual meeting for the second Thursday in August should be held at Rye, with a visit to Camber Castle. We have not heard if any shame was expressed for the discredit that has been brought on the county by the uncalled-for destruction of the original Saxon chancel of Worth Church. The Society on this occasion was found wanting.

The Birkenhead Free Library.—The annual report of this institution has just been issued. It commences with the gratifying statement that "the desire for high-class books, and the anxiety shown by the systematic reading and regular attendance of young people to get knowledge, have been most remarkable." The past year has seen a very considerable increase in the number of books issued. In 1869 the books issued numbered 46,576, against 45,146 in 1868, and 43,360 in 1867. A remarkable feature of the figures is that while there has been an increase in the total number of books given out, the number of works of fiction is considerably less. In 1867, 23,396 such works were issued, while in 1869 there were but 22,641.

Building on Unwholesome Land.—One of the points brought before the Home Secretary by the deputation of medical officers of health which waited upon him with reference to the Metropolitan Building Act, was the practice of erecting buildings upon deeply-excavated ground which had been previously filled in with rubbish containing unwholesome decomposable materials, and to which we have often alluded. It also complained of the practice of building upon wet and undrained land. It was asserted that some of the surveyors of the metropolitan district boards, contenting themselves with the plan for house drainage, took so little further interest in the matter that builders either put no drains in at all, or made a pretence of putting them in without any communication with the sewer, or departed from the plans deposited from motives of economy.

Harbour Works at Alexandria.—The Khedíveh, as the Egyptian Pacha is now called, has ordered that the harbour works at Alexandria shall be immediately commenced.

Newspaper Press Fund. — The annual dinner will be presided over on the present occasion by Mr. W. H. Smith, M.P.

Destruction of a Glasgow Theatre by Fire.—The Alexandra Theatre, Glasgow, has been burnt down. It was a brick and wooden structure, and was destroyed in an hour. The London Dramatic Company were playing at the time. The damage is estimated at 2,000*l*. The theatre had been closed at a quarter to eleven. About a quarter past twelve the fire burst out suddenly, and the building in a few seconds became enveloped in flames. The efforts of the fire brigade were mainly directed to prevent the flames from extending to the adjoining buildings. The theatre is stated to have been insured.

Building and Enlarging of Churches and Chapels.—At the last meeting of the incorporated society for promoting the enlargement, building, and repairing of churches and chapels, it was stated that grants amounting to 7,630*l*. (a sum larger than has been received in the same time), have been made within the year towards the erection of 39 new churches, the rebuilding 20, and the enlarging or otherwise increasing the accommodation in 86 other churches. The easily understood unpopularity of this society amongst architects (not attached to it) continues to increase.

The Look-out on Railways.—Sir: A sad accident lately occurred on one of our metropolitan railways. A guard looking out from his van met his death: his head was dashed to atoms against a bridge. A good look-out could be constantly kept by having a looking-glass near the door: the guard keeping his eye on the glass would have the range of the line. By night as well a night-glass would be useful. Guards would then sit back to the engine, and see all forward free from biting winds, blinding dust, and dangerous bridges.—R. T.

The Art Exhibition, Derby.—The arrangements for the approaching Art Exhibition in Derby, are being pushed forward. The committee are drawing upon available resources for contributions. The "worthies" of the county will be represented. The catalogue will contain a brief notice of each from the pen of Mr. J. J. Briggs. There will also be a collection of drawings by art-students. The committee have decided to admit members of Schools of Art at 2s. 6d. each for the season. A collection of China,—Derby, Derby Chelsea, &c.,—will be brought together.

Southampton Workhouse.—In reference to a statement at a meeting of the local board of guardians, noticed in our issue for 26th ult., Mr. Skelton, of Southampton, the architect of the workhouse, has written to the Board, explaining that he had only to provide a place for the temporary reception of insane persons, and that for this the wards complained of were amply sufficient.

The Subsidence in Turnmill-street.—The falling in of the sewers, caused by flooding of the Old Fleet, is ascertained to be the cause of the sinking of the ground in Turnmill-street, by which some dozens of houses and the wall of the Metropolitan Railway are to a certain extent endangered.

Prizes for Art-Workmen and Manufacturers.—The Council of the Society of Arts having in view the International Exhibition of 1871, have under consideration a scheme of prizes which, we venture to think, will demand the serious attention alike of art-workmen and manufacturers.

Castle Donington, Leicestershire.—A mill for spinning is about to be erected here, adjoining the Lamb Inn, which, it is believed, will prove a great boon to this hitherto depressed place. Mr. Bakewill, of Nottingham, is the architect, and the contract has been let to Mr. J. E. Hall, of the same town, with instructions to proceed at once.

Exhibitions.—The Exhibition by the Society of British Artists (Suffolk-street) will be opened to the public on Monday next, the 4th; as will that of works of the French and Flemish Schools (Pall Mall). The private view in both cases takes place this Saturday, the 2nd.

Garvel Park Graving Dock, Greenock.—We understand that Messrs. Shearer, Smith, & Co., of the Dalbeattie Granite Quarries, are the successful competitors for the supply of the granite for this extensive dock, which we believe will be the first dock on the Clyde entirely constructed of granite.

Chantrey's Monument to Kirke White at Cambridge.—A vestry meeting of All Saints parish has, after much discussion, adopted a resolution to the effect that the parish should accede to the wish of the representatives of the family of Kirke White and of the donor, Dr. Boott, of America, that the tablet be placed in the new Chapel of St. John's College, to which Kirke White belonged, on condition that the vicar and churchwardens of All Saints receive from them a legal discharge from all responsibility. While the monument was in private custody, it seems, a sum of 1,000*l.* was offered for it.

Lyons International Exhibition.—It is at last decided that this proposed universal exhibition is to take place next year. The designs for the building are ready, and preliminary measures are just commenced. The exhibition is to be open from the 1st day of May to the end of October.

The Portrait.—The portrait in our present number was produced from a *carte de visite* photograph by the process termed Dallastype, an invention which, if not yet fully developed, has in it the germ of usefulness.

TENDERS.

For new chapel, refectory, and dormitory, at St. Stanislaus's College, Beaumont. Messrs. J. A. Hansom & Son, architects :—

Myers & Sons (accepted)	£6,904 0 0

For restoration of chancel, at Conington, Cambs. Mr. W. M. Fawcett, architect :—

Bunting & Son (accepted)	£362 15 0

For rebuilding the Pine Apple public-house, and two houses adjoining, Hercules-buildings, Lambeth. Mr. L. H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett :—

Patman & Fotheringham	£4,915 0 0
Adamson & Sons	4,653 0 0
Holland & Hannen	4,624 0 0
Mansfield, Price, & Co.	4,555 0 0
Phillips	4,540 0 0
Axford	4,529 0 0
Brown & Robinson	4,356 0 0

For residence at Rockhills, Sydenham, for Mr. R. Sutton. Mr. J. F. Bently, architect. Quantities by Mr. W. B. Catherwood :—

	Residence.	Boundary Wall.
Buck	£2,149	£103
Keble	1,098	121
Hookham	1,889	138
Manley & Rogers	1,837	119
Cooke & Co. (accepted)	1,730	81

For the formation of roads and sewers upon an estate, at Hornsey, for the Right Hon. Earl Beauchamp. Messrs. Hammack & Lambert, surveyors :—

Newman & Mann	£11,086 0 0
Capper	8,989 0 0
Anderson & Son	8,903 0 0
Abbott	8,400 0 0

For Asylum of the Aged Pilgrims Friends' Society, at Hornsey Rise. Mr. F. Borcham, architect. Quantities not supplied :—

Roberts	£11,600 0 0
Perry & Co.	10,148 0 0
Jackson & Shaw	9,988 0 0
Williams & Son	9,937 0 0
Higgs	9,800 0 0
Ebbs & Sons	9,640 0 0
Hill & Son	9,345 0 0

For new hall and warehouse, in Oat-lane, Noble-street, City, for the Coachmakers' Company. Mr. F. Chancellor, architect :—

Downs	£4,749 0 0
Hill & Son	4,647 0 0
Turner & Son	4,611 0 0
Macey	4,391 0 0
Bruss	4,293 0 0
Cooper & Cullum	4,278 0 0
Henshaw	4,233 0 0
Conder	4,223 0 0
Colls & Son	3,978 0 0
Brown & Robinson	3,920 0 0
Crabb & Vaughan	3,475 0 0

For a house in Manor Park, Sutton, Surrey. Mr. E. Nash, architect :—

Colls & Sons	£3,270 0 0
Marsland & Sons	3,095 0 0
Roberts	3,019 0 0
Cuff, Potter, & Co.	2,642 0 0
Woodward	2,640 0 0
Deards (accepted)	2,455 0 0

For villa residence, High Wycombe. Mr. A. Vernon, architect :—

Goddin	£1,455 0 0
Silver & Son	1,446 0 0
Reavell	1,350 0 0
Lacey	1,300 0 0
Wood & Co.	1,299 0 0
Spicer	1,290 0 0
Dover	1,282 0 0
Loosely	1,252 0 0
Woodbridge	1,250 0 0
Ferguson	1,237 0 0
Nightingale	1,234 0 0
Cooper	1,208 0 0

For erecting six cottages and shops at Burgess-hill, Sussex, for Mr. Stephens. Mr. J. Tanner, architect :—

Norman (accepted)	£920 0 0

For new wing, Edmonton Workhouse. Mr. Knightley, architect. Quantities prepared by Messrs. Curtiss & J. E. Ormes :—

Sansom	£3,472 0 0
Howard	3,125 0 0
Crabb & Vaughan	3,120 0 0
Bently	3,026 0 0
Withers	2,950 0 0
Saunders	2,940 0 0
Nightingale	2,933 0 0
Putman	2,829 0 0
Eaton & Chapman	2,785 0 0
Wood	2,750 0 0
Windship	2,750 0 0
Pocock	2,700 0 0
Bays & Rammage	2,700 0 0
Cook & Green	2,693 0 0
Lingett	2,497 0 0
Johns	2,385 0 0

For house at Chertsey, for Mr. Worthington. Mr. T. Wonnacott, architect :—

Knight & Sons	£2,626 0 0
Simpson	2,530 0 0
Nightingale	2,405 0 0
Goddard & Son	2,370 0 0
Martin & Wells	2,345 0 0

For fire brigade station, Evelyn-road, Deptford, for Metropolitan Board of Works :—

Harrop & Gould	£2,439 0 0
Stockabury	2,152 0 0
Wittick	2,100 0 0
Thompson	2,065 0 0
Sharpinton & Cole	1,977 0 0
Nightingale	1,962 0 0
Tongue	1,949 0 0
Blackmore	1,885 0 0
Crockett	1,850 0 0
Harris & Edwards	1,846 0 0
Foster	1,845 0 0
Ball	1,839 0 0
Crabb & Vaughan	1,797 0 0
Knight	1,698 0 0
Hughesden	1,689 0 0
Windship	1,635 0 0
Hockley	1,660 0 0
Atchinson & Walker	1,645 0 0

For school buildings, South Hackney. Messrs. Searle & Son, architects :—

Patman & Fotheringham	£875 0 0
Brass	865 0 0
Newman & Mann	826 0 0
Merritt & Ashby	795 0 0
Eunor	778 0 0
Dabbs	772 0 0
Higgs	764 0 0
Dean	723 17 1
Pavitt	684 0 0

For dwelling-house and stabling, Croydon. Messrs. Searle & Son, architects :—

Myers & Sons	£3,794 0 0
Patman & Fotheringham	3,420 0 0
Macey	3,379 0 0
Dove, Brothers	3,345 0 0
Newman & Mann	3,336 0 0
Colls & Son	3,329 0 0
Higgs	3,296 0 0
Brass	3,140 0 0
Ward	3,095 0 0
Ellis	2,961 0 0
Hollidge	2,515 0 0
Pollard	2,495 0 0

For restoration of Biggleswade Church, Beds. Messrs. W. G. Habershon & Pite, architects :—

Foster	£2,549 0 0
Field	2,516 0 0
Cooper	2,515 0 0
Carey	2,460 0 0
Joy & Co.	2,450 0 0
Turner	2,445 0 0
Twelvetrees	2,358 0 0
Nunn & Co.	2,311 0 0
Moore	2,284 0 0
Pattenson	2,223 0 0
Carter & Co.	2,117 0 0
Tooley	2,070 0 0
Edey	1,944 0 0

For fifty-six cottages at Kiveton Park Colliery, near Sheffield. Messrs. W. G. Habershon & Pite, architects :—

Pattenson	£5,200 0 0
Best	4,857 0 0
Dawson	4,800 0 0
Nelson & Co.	4,750 0 0
Marnott	4,437 0 0
Moore	4,375 0 0
Weatherley	4,294 0 0
Hague	4,236 0 0
Stamp	4,217 0 0
Hobson	4,097 0 0
Wade	4,076 0 0
Binns	3,900 0 0
Keen	3,850 0 0
Cawthorne*	3,787 0 0

* Being £67. 12s. 9d. per cottage, all included, with fittings and outbuildings, and stoves complete.

For Wesleyan Chapel, Roath, Cardiff. Messrs. W. G. Habershon & Pite, architects :—

Beaver & Son	£4,872 0 0
Price	4,482 0 0
Seager	4,450 0 0
Smith & Pring	4,325 0 0
Stephens	4,300 0 0
Shepton	4,279 0 0
Stude	4,225 0 0
Thomas	4,220 0 0
Franklin	4,085 0 0

For Congregational Chapel, Pembrey, Wales. Messrs. W. G. Habershon & Pite, architects :—

Whittaker	£438 0 0
Phillips	433 0 0
Davies	423 0 0
Rowlands	384 0 0

For Congregational Chapel, Mill-street, Newport, Monmouthshire. Messrs. W. G. Habershon & Pite, architects :—

Price	£1,150 0 0
Allen	1,122 0 0
Linton	1,070 0 0
Jenkins	1,067 0 0
Little	1,063 0 0
Whittaker	998 0 0
Williams	995 0 0
Jones	990 0 0
Greenman	987 0 0
Bolt	960 0 0
Prosser	960 0 0
Thomas	955 0 0
Hayell	949 0 0
Webber	948 0 0

For two villas, Gold Tops, Newport, Monmouthshire. Messrs. W. G. Habershon & Pite, architects :—

Mills	£540 0 0
Whittaker	524 0 0
Prosser	516 0 0
Richards	516 0 0
Hayell	472 0 0
Allen	424 0 0
Greenman	410 0 0
Longwood	408 0 0

For restoration of Gayton Church, Stafford. Messrs W. G. Habershon & Pite, architects :—

Critchlow	£1,080 0 0
Elspey	743 0 0
T. & Co.	722 0 0
Ratcliffe	695 0 0
Tuskiss	689 0 0
Whitham	644 0 0

TO CORRESPONDENTS.

Paint on Glass.—Sir: Will some kind reader inform me, through your paper, how to paint my shop windows so that people cannot look through? I have tried white paint, but in winter it peels off after being on a few months.—J. B.

J. V. (thanks).—T. G. (thanks).—Q. R. D. (electric bells, properly put up, answer well).—Nemo (the fact that we have been misled by architects on two or three occasions into preparing views of buildings, which, before our engravings were ready, have been illustrated elsewhere, is no reason why we should comply with his request. We decline unconditionally).—H. N. C. (in type).—H. & Son.—R.—H. H. S.—C. S. M.—B. D.—B. & Sons.—R. P. P.—S. W.—L. Y.—E. D.—J. G.—T. G.—S. S. & Co.—F. J. W.—L. O.—S.—One of the Throng.—W. H.—C. J. R.—S. S. B.—J. D.—F. J. M.—J. F.—B. & Son.—B. F.—E. N.—B. E. N.—H. & F.—J. R.—S. & Son.—J. T.—Mr. K.—M. T.—J. E. O.—F. B.—A. T. P.—B. T. & Sons.

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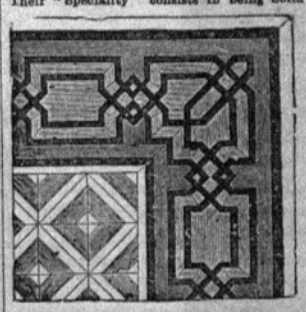

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VOL. XXVIII.—No. 1418.

Picturesque Designs.

DELIBERATE and intentional effort after what is termed "the picturesque" we hold to be, in the main, a very delusive pursuit for any architect to engage in. It is true that our prejudices on this head may have been excited to an unjust extent, by the average published results of such a pursuit. We can call to mind few instances of what are termed picturesque designs for villas, and so forth, which have not literally illustrated the term applied to them, in that they have been fit for a picture, and for nothing else. The quality of picturesqueness itself is, indeed, as regards architecture, at least, a sort of artistic *ignis fatuus*, indefinable by those who are in chase of it; a fact which is admitted by the author of the volume before us,* who observes at the commencement of his introduction that "the architect usually considers that if his building look well when seen by moonlight, or through the medium of a foggy or dull atmosphere, it is picturesque, and he is satisfied." And though the author professes to elucidate more correctly the theory of the picturesque, and even tells us (p. 24) that "the *general principles* for obtaining that effect have been pointed out," we do not find ourselves much nearer the mark after reading his introductory essay. His very first example is from the *ruins* of a Roman temple, which may, no doubt, be "highly picturesque" when time and weather-stains have done their work upon the masonry, and when "the even regular lines of the doors and windows are broken, and through their ivy-fringed openings is displayed, in a highly broken and picturesque manner, that striking image described by Virgil:—

> 'Apparet domus intus, et atria longa patescunt,
> Apparent Priami et veterum penetralia regum.'"

But with such picturesque dilapidation, architecture, as we understand the term, has nothing to do; and as to the quotation from Virgil, we have always considered the real charm of that magical passage to lie precisely in the *architectural* effect of the stately palatial vistas and corridors, suddenly opposed in our fancy to the picturesque glare and confusion of the battle and conflagration outside. Waiving this, however, it may be said in general that picturesque effect, if sought for as a primary object by the architect, is very likely to be gained at the expense of, and in opposition to, the legitimate architectural desiderata both of construction and design; but that, on the other hand, where truthful and sober architectural design and construction are sought for in the first instance, the result is very likely to include also what most people will admit to be in one sense, picturesque, without too closely defining the term. Indeed, our author confirms this view himself, when he observes (p. 9) that the Gothic style of architecture "is remarkable for its picturesque character, and may fitly be adduced as an example of that quality in the absence of an exact definition of the term:" since there is no style whose main features are more directly the outgrowth of constructional influence and requirements. If, however, Mr. Richardson fails to make us converts to the picturesque school, we can recognise in his book, nevertheless, a substratum of sound common sense in practical matters, with a good deal that is suggestive as to the artistic planning and treatment of domestic edifices.

It is only fair to observe that the author professes to put forth this work rather for the guidance of non-professional than of professional men. Commenting on the fact, familiar to every architect, that a client is in many cases totally unable to explain intelligibly to his architect what it is that he requires, or even to form a conception of it himself, Mr. Richardson thinks, nevertheless, that,—

> "When a variety of designs is placed before the eye of any intelligent person the act of selection becomes easy. Although no single plan may succeed, a combination may suggest itself, and the architect can then readily work on something like a sound foundation, and with the hope of success. This work is intended to supply such requirements." (p. 26.)

To this end readers are presented with forty-one designs, accompanied with plans (and in some cases details of ornamentation) for various kinds of erections, including villas of large and small size, summer-houses, bath-houses, garden-seats, stabling, &c., in very varied styles, in some cases somewhat abnormal, and nearly all more or less illustrating the author's predilection for that rather irregular and sometimes fantastic treatment of general designs or of detail which in most minds is associated with the term "picturesque." To some of the best of these justice is scarcely done by the engravings, which (the perspective views especially) show no very great finish of execution; and the author had better have cut out altogether the fanciful frontispiece opposite the title-page, and the view of a "Greek Temple" preceding the introduction; the latter engraving in particular is sufficient to prejudice any architectural reader against the rest of the work. But amongst the multifarious illustrations which follow are some which possess a good deal of novelty and originality. With regard to the first few designs for small lodges, cottages, and houses, the demon of the picturesque has played his usual tricks with the designer, suggesting the employment of unsquared boughs in the place of pillars to porches, and other "gauds" which we are not worthy to denounce. But the arrangement and design of the lodge (No. 10), intended for a triangular site commanding three roads of approach, is simple and ingenious, and the effect (we should judge) pleasing, in spite of the unhewn posts to the porches. No. 11, for a gateway and lodge in the castellated style, is also pleasing and effective. "The family architect," observes the author, "in such cases, will have to make various sketches before one is selected that gives general satisfaction;" a statement which a good many "family architects" can probably corroborate from sad experience. Few architectural students of the present enlightened epoch will see without a smile the design (No. 12), for a stove bearing the outward form and semblance of a half-length mailed and helmeted figure, though some old stagers will perhaps find a sort of relief, in these tremendously virtuous days, in coming across a thorough bit of deceptive whimsicality such as this. Passing over some designs calling for no special comment, we come, at No. 21, to a pretty and picturesque idea for a bath-house and summer-room, intended to be erected on a site in a park in Kent, enjoying an extensive prospect.* The ground-floor forms the bath, supplied by a natural spring of water, and a separate entrance leads up to the sitting-room above, corbelled out beyond the line of the lower story. Of this we give a view; the plans have their titles interchanged in the book, by some error. Details also are given on a larger scale in the book, of the panelling, &c.; the whole, though a little thing, is a pleasing specimen of English half-timbered design. A more elaborate production of the same nature is No. 23, "a villa in the old English wooden style," suggested by an elevation given in "John Thorpe's Sketch-Book." This is a tolerably large dwelling-house, in external appearance a timber and plaster erection, although in fact "the timber was merely intended as an appendage to the brickwork. The exterior walls were to have been two bricks and a half thick on the ground-floor, two bricks above. The wooden posts and pans were let into the external half-brick, and well built in; the ornamental woodwork in inch oak, screwed to the wood quartering; the space between them filled with plaster, with an ornamental pattern stamp on it; and the columns and entablature were of oak." A very symmetrical plan gives more soberness and unity than would otherwise belong to the style of decoration employed; and a noteworthy point in the design is the use made of two octagonal cupolas which rise (on the garden front) slightly above the main roof-ridge, as what the author terms "garden-bower" rooms. The roofs of these rooms were to be constructed in iron and glass, and covered internally with wire trellis-work, up which fruit-trees could be grown. The perspective view placed at the commencement of the volume (erroneously entitled an "elevation"), and which we reproduce, gives a good idea of the design; but in this and the elevations it is apparent that the designer has not sufficiently remembered that forms which look well on a small scale in decoration may be quite unsuitable on a larger scale: witness the large scrolls and curls of the ornamental woodwork. A similar defect spoils the best of his designs for a garden-seat (No. 31), which is only hindered from being really pleasing and successful by the Brobdignagian scroll-work at the top, which, besides its inherent clumsiness, reduces the scale of the whole thing. A design (No. 35) for a Riding-house and Stabling is worth attention for its simple plan combined with more of architectural grouping than is always seen in buildings of this class, and an elaborate and grand scheme for a sculptor's villa (No. 29), may prove suggestive to those who have to carry out any such thing on a large scale. This is a plan for a large and almost palatial villa, having a long sculpture-gallery in the centre, between the suites of rooms, occupying the whole height of the building, with an open gallery running round it on the upper floor, the ground floor opening at one end through an ante-room into a spacious circular conservatory; while at the opposite end the vista is terminated by a grand group of sculpture, round which, as a base winds the ornamental staircase leading to the upper gallery.

A scheme to which the author attaches some importance is that described in the course of the chapter on "Queen's Gate Lodge, Hyde Park," for laying out the site between Brompton and Kensington originally purchased at the instance of the late Prince Consort for the erection of a Central Hall of Arts and Sciences, and other

* "Picturesque Designs for Mansions, Villas, Lodges, &c., with Decorations, internal and external, suitable to each Style." By C. J. Richardson, Architect. London: Atchley & Co.

* See p. 289 for Illustration.

cognate institutions thereupon. Mr. Richardson thinks it "cannot be supposed that a sum of 340,000*l.* would have been expended by the nation for the purpose of giving the Horticultural Society a perpetual lease of the best portion of the estate purchased. It is already evident that the gardens are not well situated there. . . . In much less than fifty years their grounds will, probably, be the centre of London, and consequently the noble conception of his Royal Highness has still a good chance of being carried into effect." Considering that the term of years proposed for the transformation is one that will, it is to be feared, preclude the idea of our amiable author himself reaping any benefit from it, the interest he evinces in it is, at all events, disinterested; and those who wish to see at once a grand and useful *place* formed on the site alluded to, may thank him for "stirring up their pure minds by way of remembrance," touching its possibilities, even if they are not satisfied with his scheme. This latter, however, so far as we can judge from a somewhat meagre bird's-eye view (page 105), representing the design "intended to embody the views of his Royal Highness Prince Albert," or rather that portion of it which faces Queen's Gate, would have, if carried out, a sufficiently dignified and architectural effect, besides being arranged (by the author's description) with a commendable attention to convenience and symmetry of plan. The level of the ground on the north at Kensington is about 36 ft. higher than the portion at Brompton—

"By putting the level of the ground floor of the new building about 10 ft. above that of the Kensington-road, a sub-basement would have been obtained, over 30 ft. in height, affording ample space for arranging and storing works of art, as well as for receiving articles to be exhibited, or a great portion of them, from the upper parts of the building, should the latter be wanted for any special purpose. The Hall of Arts and Sciences was to be placed in the centre of the mass of building; a portion of the dome is to be seen in the view at the upper left-hand corner. This room was to be made 300 ft. in length by 180 ft. in width. Two galleries for painting, each 1,000 ft. in length by 80 ft. in breadth, were to be placed on each side of the central hall. The sculptures from the British Museum were to be deposited in the central smaller halls of approach. The various societies were to occupy the side wings, each having its meeting and lecture room, and all necessary offices and apartments. The public were to enter at the portico seen in the view, and the carriages of the professors at the gateways in front."

Let us hope, in regard to this last provision, that all the professors possess carriages (a point which is apparently assumed); in which case this wholesale professorial charioteering would perhaps be one of the finest parts of the show. But the whole scheme, if savouring a little of the spirit of Haussmann as to its grandeur, is one which it is worth while to keep before people's minds.

Our author's practical observations upon points connected with the comfort of houses are many and various, and such as we cannot go into at any length. In ventilation, his principle is that the staircase is the natural ventilator of a dwelling; "from this general opening communications can be made into, and from, each apartment by apertures placed in some convenient position in each room;" the air being warmed and ascending on entering the staircase-well. But care must be taken not to make too wholesale an inlet of air for ventilation, in this climate. A case once came under our notice, in which a gentleman who was determined to have his house systematically warmed and ventilated, had it built with windows permanently closed and air-tight, all air being admitted through large gratings in the basement story, warmed there, and passed up by the staircase-well through the house. But the first gusty day after he went into occupation his ventilating gratings were to be seen stuffed up with straw and matting; the east wind had begun to have its own way all through the house, and he had found that there was such a thing as too much ventilation. In a long chapter on "the Fireplace," and all connected with it, the author replies to the supposed question, "What has a work on picturesque architecture to do with either smoke or sewer gases?" by affirming, with much reason, that buildings never will look picturesque while covered with great patches of soot, nor while stuck over with "tall-boys." These last are, indeed, the bane of the architect; but it was remarked in these pages years ago, that architects in general had come to no conclusion as to how to design chimneys; and we do not seem to be much nearer the mark now. "The public," says Mr. Richardson, "have so long been accustomed to be choked with smoke, and their health affected by deleterious gases, that they look upon the proposal of any scheme to secure pure air as the fond hallucinations of dreamy philosophers or inexperienced Utopians." His schemes for ensuring up-draught and preventing down-draught in chimneys, for collecting the soot before it reaches the external air, preserving and utilising it (one of the means suggested of doing this is to pass the smoke through a light spray of water, by a method illustrated by diagrams, and before now mentioned by us), are worth attention as suggestions, at all events; in these matters, the proof of the pudding is in the eating. With regard to the warming of buildings, there is a description given of the application of the hot-water circulating system, "introduced into his dwelling by one of our most eminent philosophers," which deserves to be noted. The whole length of piping was, by means of a multiple cock, divided into four circulations, any of which could be turned on or off at pleasure. Thus,—

"In winter the hat-room received a portion of piping, so that coats and gloves, even in the dampest weather, were always kept dry. One circulation was sent through the dining-room a short time before it was used; it was after a certain time turned off and sent through the bedrooms and dressing-rooms. The various rooms in winter were kept at different temperatures, the dressing-rooms were a few degrees warmer than were the bedrooms: an inducement for early rising (adroit philosopher!) . . . . In the morning, about seven o'clock, the fire was well shaken by means of a lever attached to the bars of the grate. Coal or coke was supplied, and the air-valve opened. The stop-cock was then turned on to supply the coils for the library and stairs. At about eight o'clock in the evening the stop-cock was turned to heat the coil of the bath, and at eleven o'clock, fuel having been supplied, the air-valve was completely closed, and the damper if necessary. By these means the fire burned very slowly during the whole of the night, and the bath cistern received the warmth thus generated. These conveniences and luxuries might be more generally applied than they are at present in the dwellings of this country."

In which latter remark most readers will concur; indeed, we may say with Bunyan's Pilgrim that "the hearing of these things is enough to ravish one's heart."

We hope that no non-professional reader who may get hold of Mr. Richardson's book will expect his architect to adopt the suggestions made therein as to the use of encaustic tiles in floor and wall decoration. The short chapter on this subject is the most singular instance of the recommendation by an architect of precisely the wrong thing in architectural taste that we have ever seen. The author speaks with contempt of geometrical tile-patterns, as a stiff conventional decoration; and, by way of making them "more artistic and pleasing," he proposes a sort of realistic design imitative of knots of buds and flowers carried through irregularly from one tile to another; or, in the case of walls, an apparent trellis, with leaves and flowers intertwined, upon a blue ground; "the design would then show a flowered trellis against the sky;" or, in other words, make the wall look like what it is not, and give the appearance of relief where everything should be quite flat. This would be very well for a summer-house in a German tea-garden, but all such permanent mural decoration in a really architectural building should surely partake of a strictly architectural character. Our author, however, is in search not of the architectural, but of the picturesque, and hence these aberrations. With regard to ornament in perforated woodwork, too, of which Mr. Richardson gives us sundry little French specimens as illustrating the superiority of our neighbours in this way, we must say that we have seen far better ornament of this kind cut by English workmen from the drawings of English architects. The specimens given by Mr. Richardson are coarse and commonplace in comparison. This sort of ornament requires to be treated with delicacy, and not cut in large or too irregular patterns, or it looks ragged and clumsy. Those who may be tempted, in a search for the picturesque, to make trial of the old-fashioned English timber style, should be cautious so to tie in their fronts to the beams and joisting of the floors as to make the whole one construction, horizontally as well as vertically, otherwise in course of time the front will show a tendency (as some of those in Chester have long done) to hang over and part company with the rest of the building.

Lastly, speaking generally, we may say that though there are in the volume before us things which we do not approve, and which few architects of the younger generation will concur in, the latter may very well pardon a little that is "old fashioned" for the sake of gaining a good many suggestions, especially upon some practical points, characterised by much common sense, and which may stimulate them to give attention to points which they may have been too ready to consider as secondary and uninteresting. Mr. Richardson is an old labourer in the architectural field, and has done useful work in his time.

There are a good many printer's errors in the book, some so very glaring as to render it evident that circumstances must have interfered with the author's final revision. "French marionette" for "maisonnette" (p. 251, and in the index also) and "drainage" for "drain-eye" (p. 357 *et seq.*), are among the worst; and there are some others which will be apparent to the reader.

UNIVERSAL ART INVENTORY.

IN a recent number of this journal (p. 117, *ante*), while giving an analysis of the provisions of the Government measure for the general primary education of the country, we incidentally referred to the efforts of the Science and Art Department of the Government for the spread of technical instruction, as being intimately connected with the general educational state of Great Britain, and successful during the brief period covered by their history.

While the definitive plan of our future primary instruction is yet under discussion, the labours of "the Department" have entered on a new, and a very important, phase. If we regard the South Kensington Museum as a great establishment for the education of the workman by the eye,—an object in the attainment of which it is certainly without a rival in the world,—it may yet be objected that the advantages which it offers are confined to the residents or visitors of London, supplemented only by that degree of stimulus which may be given to the Art education of the provinces by the circulation of objects on loan.

To obviate this objection, the attention of the managers of the Institution has been directed to the Literature of Art. We are not now referring to the Art Library itself. Every library is necessarily local in its main utility. But a series of special catalogues, each comprehending an exhaustive description of some minor division of the collection, is now beginning to appear. Several valuable monographs of this nature have been very recently completed, and others are in course of preparation. The results of the whole will be such a complete and classified description of all the costly treasures collected beneath the roof of the museum as will be of the utmost value to students who are unable to visit the spot, and of scarcely less notable service to those who are able, when in the museum, to devote only a limited time to the study of any particular branch of art.

Among these literary products of the museum, five works dated in the present year are now before us. Of these the first, or at all events the most voluminous, is entitled "The First Proofs of the Universal Catalogue of Books on Art compiled for the Use of the National Art Library and the Schools of Art in the United Kingdom. Vol. I., A. to R." Then we have a catalogue of the gems and precious stones bequeathed to the South Kensington Museum by the Rev. Chauncey Hare Townsend, M.A., drawn up by the lucid pen of Mr. James Tennant, F.G.S., Professor of Mineralogy, King's College, London. A descriptive catalogue of the musical instruments, illustrated by eighteen cuts, has been prepared by Carl Engel. A new edition of the "Guide to the Museum" brings down this useful manual to the present date. And an entirely new literary feature has appeared under the startling and ambitious title of a "Universal Art Inventory, consisting of brief Notes of Works of fine and ornamental Art executed before A.D. 1800, chiefly to be found in Europe, especially in connexion with Architecture, and for the most part existing in Ecclesiastical Buildings." This work has been edited by Mr. Cole.

The origin of the Art Inventory was a request addressed by Earl Russell in 1864, on the motion of Earl Granville, the Lord President of the Council at that date, to her Majesty's representatives at Paris, Dresden, Berlin, Munich, Turin, and Rome, that they would forward to London catalogues of the galleries, museums, and collections of objects of art now existing in the chief cities of Continental Europe. It was proposed that the information thus obtained should be arranged in the form of an inventory, which would be of service not only for the United Kingdom, but also for other countries.

The replies to their inquiries were satisfactory in one respect, and in one alone. They distinctly show that, whatever perfection may hereafter be

attained by so admirable a scheme, it is to this country that not only the origination of the idea, but the first blocking out of the plan must be exclusively attributed. However backward we may ourselves have been in preparation of records of the art of the world, we have, at all events, been the first, not only to detect the deficiency, but to take measures for its removal.

Mr. Odo Russell sent to the Foreign Office seven catalogues of public galleries, and five printed and three MS. catalogues of private galleries, in Rome. He observes that the Vatican catalogue of antiquities is unworthy of the collection. That of the Capitoline Museum is out of print. The Lateran Museum, that of the Accademia delle Belle Arti, the Galleries of the Palazzo Rospigliosi, of the Villa Albani, and the frescoes in the public and private palaces of Rome, are uncatalogued. Murray's Handbook is quoted by Mr. Russell, as containing the best account of all the objects of art in Rome.

From Berlin Sir A. Buchanan returns twelve catalogues of pictures, sculpture, and antiquities, and a reference by Dr. Waagen to a German work, "Deutschen Bilder Saal Verzeichniss der in Deutschland vor handmen Œlbilder verstorbener Maler," an expected new edition of which was to contain "a notice of all the best catalogues." The "Art Topography" of Germany was also recommended by the Minister of Public Instruction; but "a collection of trustworthy and complete material, in the sense wished by her Majesty's Government," is only regarded by his Excellency as "a work which would take up a great space of time even to persons educated for this purpose." (The English of the communication appears to be that of the Prussian minister.)

The Italian Minister for Foreign Affairs communicated to Sir H. Elliot fifteen printed, and eleven MS., catalogues of paintings and "*oggetti d'arte*;" with the explanation that *none* of the galleries and public museums of the State possessed complete printed catalogues, and that a detailed description of their treasures would be "a work so colossal and expensive that it cannot be undertaken at present." It may be observed in passing, that no Italian description appears to exist, either of the fine armoury at Turin, or of the interesting collection of paintings in the Palazzo Madama in that city.

From Munich, the information is yet more meagre; being confined to the suggestions of Professor von Hefner Alteneck as to the mode of complying with the wishes of the Committee of Council on Education, and a promise that Baron Schrenk will confer with the Minister of Public Works on the subject.

Thus, in the main, Mr. Murray's hand-books are the only generally available guide for the investigation desired by the Science and Art Department. They have been freely quoted in the compilation of the "Universal Inventory."

Mr. Cole has laboured with characteristic courage and perseverance to fill up the vast blank thus shown to exist. We have now before us Parts I. and II. of the "Inventory," treating respectively of mosaics and of stained glass. "The work," the preface very properly states, "must be considered as a beginning, and is not complete: notices of objects which are omitted, and corrections, will be thankfully received." As it is, it may be considered as an index to the literature of the subject; as an identification, rather than as a description, of the objects named; and, above all, as a guide to the traveller, the tourist, and the local observer and annotator, who may be educated in art, not only as to what to visit, but (which is far more important) what to describe. The series of communications which we trust that the publication of this "Inventory" will provoke may lead, in course of time, to the completion of a really exhaustive catalogue.

The inventory of "Mosaics on Walls, Pavements, Mosaic Encaustic, &c., Cabinets, &c." is preceded by a list of sixty-seven publications which have been consulted for the work. This list, however, is far from including all the authorities referred to in the text. It mentions no catalogues. An addition containing the titles of such of those documents as have been collected would be of great utility. The MS. notes which are cited might also be noticed in the list. On the very first page is a reference to A. Laborde, "Mosaïque d'Italica," a work repeatedly cited, but not to be found in the List, which will, no doubt, be largely supplemented in future editions.

In fact, it is evident that seventy-four clearly-printed pages can only contain, as it were, the first draught of an inventory of known mosaics. The memory of almost every traveller may be expected to furnish him, even at a glance, with additional contributions, that will no doubt be gladly welcomed by Mr. Cole. Thus, we may mention that at Brindisi, which interesting city is not named in the inventory, there exists, or existed in 1856, on the floor of the cathedral, one of the largest pieces of mosaic pavement known in Italy. In that year the Archbishop of Brindisi was proposing to destroy, or to cover this grand relic of ancient art, in order to remove the slight irregularity in the floor caused by the partial subsidence of the mosaic. In many parts of Southern Italy remains of "antichità" are abundant. They are protected by the law, and almost invariably respected by the peasantry—a striking lesson to our own barbarous rustics. Of the famous submerged pavement of the Temple of Neptune, at Sorrento, we are not aware that any account is accessible. The superb mosaic floors of the Roman villa which was discovered in the Piazza Vittoria, at Palermo, in December, 1868, were described in our own columns (*Builder*, No. 1391, p. 779), and should be mentioned in future editions of the Inventory. Their omission in the present instance is no doubt due to the fact that the title of the article in which they are described, does not contain the word "Mosaic;" as a very brief notice from our pages of the discovery of a fragment of pavement at Snodland, on the Medway, is extracted with due acknowledgment. The journal of the "Scavi," now in progress at Pompeii, is another work which should be consulted as to mosaics. It is conducted under the able supervision of the Chevalier Fiorelli.

Again, under the head "London," to the mosaics indicated should be added some account of one discovered last year, at the depth of 17 ft., on the line of the new street from the Royal Exchange to Blackfriars. This ancient relic, some 10 ft. square, merits a fuller description than it appears yet to have received.

The pavement in question closely resembles, in some particulars, former examples of Roman mosaic, which may be seen at the Guildhall Museum. In other respects it is peculiar; and in nothing does it so distinctly bear the stamp of a very remote past as in the fact that it is composed partially, if not wholly, of the fragments of buildings older than itself.

The materials of this relic consist of irregular *tesseræ*, of some ⅜ in. square, of four distinct colours. The darkest of these are formed of portions of a dark grey stone, resembling Welsh slate. Next comes a lighter coloured stone, possibly Kentish Rag. Then we have a white material, apparently chalk. With these natural substances are interspersed portions of pottery or broken tile, not well-shapen, well-burnt *tesseræ*, but blocks cut by the axe or the hammer, and as rough and irregular in their approach to a square form as are the stone blocks which they accompany. The edges of the pattern, which were probably not exposed to view, are formed of larger sized blocks of stone and of brick, and the rude nature of the work points to its execution by British workmen under Roman direction.

The centre of the pavement was occupied by a circle surrounding a cross. It can not be asserted that this is a positive, undeniable Christian emblem. It closely resembles the five shields which are borne cross-wise in the arms of the kings of Portugal. The centre compartment is of a lighter colour than the four limbs. Still, whether unintentionally or not, it is an actual cross, and the fact is one that has hitherto escaped attention.

Around the cross are rings of the several colours employed in the pavement, depressed heart-shaped figures, and an attempt at the production of a cable pattern, a resemblance to which is to be found on some of the other specimens now in the Guildhall Museum. In the present case, however, the effect is that rather of a series of complicated knots than of a cable. Irregular polygonal figures fill up the pattern. The work, though rough, is solid in execution, and clearly indicated, however rude, in design. Its maximum antiquity it is, of course, easy to fix—its actual date is more doubtful. The rise of the streets of the City over its level to the height of 17 ft. is a very instructive fact.

Twenty pages of the "Universal Art Inventory" are occupied with the mosaics in the Roman States, for which numerous authorities are cited. To these, in the next edition, should be added the "Historical Photographs" of Mr. John Henry Parker, the third part of which series was published in 1869. A large proportion of the mosaics which they represent are older than the twelfth century, and some of them date from the reign of Constantine. The Paschal candlesticks and tombs of the Cosmati family, enriched with admirable ribbon mosaic, are not to be paralleled out of Italy. The reference to an accurate representation of so many of the objects indicated in the "Art Inventory" will hereafter prove a valuable addition to the information which it already furnishes.

The catalogue of stained and painted glass is preceded by a list of works in the Art Library, containing information on the subject, amounting to sixty-six, besides serials. The approaching completion of the Universal Catalogue of Works of Art, which may be expected in May, and which will contain the titles of 70,000 books, will allow of the preparation of exhaustive indexes as to the bibliography of each special branch of the Universal Art Inventory,—a feature that will add immensely to its value. It will be observed that in this first edition the titles of books on mosaics, which are quoted, form a list of those which have been consulted for the formation of the Inventory, while the list of works relating to stained glass merely refers to books in the Art Library. No doubt in future all the literary information will be arranged upon the same plan.

Seventy-five pages are occupied with the inventory of stained glass, exclusively in windows. The additions to be made in future editions will be very numerous. The list is, very wisely, so arranged as to include references to the history of famous windows now, unfortunately, destroyed; as in the case of the Chapel of the Abbey of Fontevrault, which contained three windows of twelfth-century work no longer existing. Under this head future editions should contain a reference to the blazoned windows of the ancient Chapel of Bourbon l'Archambaud (the cradle of the Royal House of Bourbon), so remarkable from the tradition that on the day of the murder of King Henri III. (1st August, 1589), a flash of lightning struck the glass, and shivered from the coat of arms the *bâton* forming the heraldic difference of the Bourbon Princes, leaving the arms of France, "*pleines*," which the blow of the assassin entitled Henri of Navarre to assume.

The ecclesiastical buildings of the Spanish and Italian peninsulas contain a large amount of glass as to which no index is as yet accessible. Batalha, in Portugal, is mentioned as having had its windows for the greater part irreparably injured by the French. In no country has the splendour of art been lavished more freely upon churches and convents than in Portugal, and there must yet be much to repay a conscientious search, in glass no less than in encrusted and inlaid marble. Genoa, too, is unnamed in the Inventory. The rich hues of the windows of the great church of the Annunziata cannot readily fade from the memory of the traveller; and there must be much more old glass yet existing in this City of Palaces.

As to English stained glass, the editor will, no doubt, receive numerous contributions towards an enlargement of his catalogue. Not to speak of smaller relics of perished works of value, or of blazonry of various dates, such as are to be found in the Mortuary Chapel of the Dukes of Bedford, at Chenies, in Buckinghamshire (see *Builder* of October 6th, 1866),—of examples of plain old coloured glass, as at Knole—there are English mansions to be added to the Inventory which are famous for their ancient windows, as, for instance, Cothele and Toddington. This latter noble residence, rebuilt, under the name of an Abbey, by Mr. Hanbury Tracey Leigh (before his elevation to the peerage), is rich in fine old stained glass, brought from Spanish convents, and should hold a place in future editions of the Art Inventory.

The windows of Fairford Church, as to which so much was written in our pages the year before last, are safely said to be from "designs attributed to Albert Dürer, and also to Francesu Francia." Very brief notices are given of the superb windows to be found at Rouen, in the Cathedral, the Churches of St. Ouen, St. Godard, St. Maclou, St. Patrice, and St. Vincent, in the Museum, and in the house of M. Bonissent. No collection of glass, either in France or in England, equals the chronological series, from the thirteenth to the seventeenth century, arranged in the Museum of Rouen.

Twenty-six large stained-glass windows, forming a complete history of Jesus Christ,

beginning from the birth of the Virgin Mary, and dating from 1527 to 1531, now exist in King's College Chapel, Cambridge. Fragments alone of stained glass are to be found in the contemporary Chapel of King Henry VII., at Westminster. Of the third of these richly ornamented efforts of this period of English architecture, St. George's Chapel, Windsor, we find no mention in the Inventory.

The large rose window in the north transept of Lincoln Cathedral is mentioned as the most important example of Early English stained glass now existing in the country. The date is stated to be about A.D. 1200. This window shows, in the central part, a representation of the blessed in heaven, with Christ sitting in the midst. Sixteen circles, each full of allegorical or doctrinal symbolism, form the outer part of the windows, and an angel tossing a thurible is figured in each of the four trefoils at the angles. Much old glass, of very rich colouring, is to be seen in other windows of this cathedral. Canterbury yet contains a window, in the north transept, which was the gift of Edward IV. and his queen; as well as representations of the figure and of the miracles of A'Becket, dating from the twelfth and thirteenth centuries. The great windows of the nave and choir of York are filled with painted glass, by John Thornton, of Coventry, A.D. 1404 to 1409. Early Norman glass, of the twelfth century, is found in the clearstory of the nave. Windows, of the times of Edward III., of Henry IV., Henry V., and Henry VI., are all extant in this noble minster; and the harmonious effect of the *grisaille* will not readily be forgotten by its visitors. In the chapter-house are seven lancet windows, exhibiting the arms of England, the escutcheons of benefactors to the Church, foliage, geometrical forms, armorial badges, saints, prophets, kings, queens, and events of sacred history. The ruby and dark blue tints are especially rich.

The sprawling Crucifixion recently erected in the central east window of St. Paul's is excluded from the "Art Inventory" by its recent date. The glass at Durham does not go back to an earlier date than 1450, and much of it is fragmentary. The glass at Winchester is of the fourteenth and fifteenth century. The great east window of the choir of the cathedral of Gloucester dates in 1345, and is the finest stained glass of the Decorated period in the country, representing a long series of prophets, saints, and Jewish kings, larger than life, and now well restored. The east window is filled with original glass of the fifteenth century, white and yellow being much employed. The ruby glass in the west window of Exeter Cathedral is "said to be some of the latest manufactured in England at the revival of the art." Rochester, which contains a considerable quantity of stained glass, some of which at least is probably old, is not mentioned in the Inventory. Ripon is only spoken of as containing "windows of old stained glass." Bath Abbey, St. Alban's Abbey, St. David's Cathedral, and other religious edifices, which bear traces of very ancient or very elaborate windows, might be referred to with advantage, as, even if no traces are now to be found of the glass, the historic record of its existence or of its destruction is not less interesting than in the case of Fontevrault. In fact, an orderly reference to all our cathedrals, minsters, abbeys, and important and ancient parish churches, even if accompanied only with the note "no stained glass now existing" might advantageously form a feature in future editions of this part of the "Universal Inventory."

It would be desirable, also, that some reference should be made to the windows of the church of San Vitale, at Ravenna, which M. Lacroix states were filled with stained glass in the time of Justinian. The walls, vaults, and apse of this church, we are informed in the catalogue on mosaics, are covered with work of this description "of the time of Justinian, as fresh as the day they were placed there." Twelve churches in this whilom capital of the world are referred to as rich in mosaics. Can they all be entirely destitute of stained glass?

We feel sure that no one will welcome the hints which have occurred to us on the perusal of this very interesting volume more heartily than the editor himself. The work forms a new claim on public gratitude. That Mr. Cole should have found leisure for its preparation, among all his toils, is in itself a matter for surprise. The attempt to construct such an inventory from the partial and fragmentary information which has hitherto been accessible, is one which demands something of the credit due to the leading of a forlorn hope. The future value and importance of the work will be very little affected by the more or less ample fulness of the first edition. The sketch of such a work is in itself no small boon to art. We venture to suggest the preparation of interleaved copies, to be sent to men who are well versed in the several subjects of the successive parts. Their return to South Kensington, with annotations and additions, will be a national benefit. As an instance that is not without an amusing point of view, let us suggest that the director of the South Kensington Museum might insert in his own private copy some description of the interesting specimens of ancient glass which are to be seen in that building, including some from the Sainte Chapelle, Paris, of the thirteenth century. No one can accuse the editor either of unacquaintance with the fact of their possession, or of egotism in giving undue prominence to this importance. We trust, moreover, that the plan usually followed in the South Kensington publications, of prefacing each special catalogue with a brief but lucid *précis* of the state of our best information on the subject to which it relates, will not be permanently departed from in the "Universal Art Inventory." We congratulate all concerned on the appearance of the work, and we trust that its reception by the public will be such as to call for the speedy issue of a second and enlarged edition.

THE FRENCH MIND.

BUILDINGS are monuments of mind, and architecture is the truest index of a nation's genius. If English art is free, varied, but often queerly whimsical, it is because the English character loves liberty above all things, even at the expense of wisdom and beauty. If French art, in its timid sameness, has the oneness of massive creation, it is for a psychological reason we here beg leave to explain.

The history of France is the history of centralisation; we might almost say, the history of *leading ideas*. Politics, literature, science, and art have always in France revolved round centres. French military monarchies, the French Academy, and French schools of art, show how readily Frenchmen will sink their individualities in behalf of an idea. Frenchmen, we repeat, are ever hurrying to *centres* which they prop up with congenial ornaments. Given an object of thought, and a French thinker there and then casts about for some dominant feature whereon to hang bright hints and ingenious speculations. If he be a dramatist, he will select some passion, embody it in a representative being, and, by bringing it to a dazzling climax, strike the spectator home with one resistless impression. Corneille's "Polyeucte," Racine's "Athalie," Molière's "Tartuffe," are all alike in this quality of artistic structure; for each of those plays is the radiation of *one* idea. But the same characteristic belongs to lyrical and satirical poets, such as La Fontaine and Béranger, to sentimental poets such as Lamartine, and to all French historians, orators, pulpit preachers, and philosophers.

A poem like the Iliad, where every hero has his prowess-time, or ἀριστεία, is utterly abhorrent to French artistic conception; and equally so is Milton's "Paradise Lost," because its golden rays fly parallel into space and *converge* not. Where is the centre-piece, where the centre-deed of these epopees? objects the French critic. But the Odyssey and the Æneid, which are centralised in Ulysses and Æneas have been imitated by Fénélon and Voltaire. It is, indeed, very characteristic of the English and of the French minds that Homer is the more popular poet in England, and Virgil in France.

The arts of music and painting are also treated by Frenchmen with a view to central effects. The most striking passages in the works of Auber, Gounod, Chopin, and others, are as much the results of a scientific focalising of melody as they are outbursts of inspiration. Again, in painting, the historical school stands foremost in France, because its subjects allow of centre thoughts, *idées mères*, as they are called. If the subject be the bursting of a siege-gun in a redoubt, all the figures thronging the canvass will have an attitude or be doing a work which bespeaks the accident. Every sentry by some act of terror, every stray implement of war by its partial destruction, will tell the tale of the explosion. The general tone of the colouring will be managed so as to set off the flash and smoke of the bursting cannon. Variety in unity; such will be the French picture.

The French art of war, as understood by Napoleon, is the art of massing troops in *one* point. Napoleon's concentrating genius is French genius typified by a giant mind.

The Greek mind, which is Teutonic in its poetic exuberance and French in its method, gives us in the Laocoon group a fine sample of the qualities most valued by French sculptors. Laocoon, the central figure, at once arrests the attention of the spectator. Laocoon's sons, writhing in the knotty folds of the serpent, seem to suffer in order more boldly to bring out the anguish of their father. In conception and execution the Laocoon group is the paragon of sculptural centralisation.

Now, architecture, which might be defined as *the art of arranging parts*, is, of all arts, the the most likely to be swayed by the French spirit of centralization; so it occurs that a French building is, as a rule, the organic outgrowth of *one* idea. Every portion, every ornament of the building,—ay, the very ground it stands on and the gardens which surround it,—subserve that idea or purpose. If the building be meant for a stable, the body of the building will be so suggestive of a stable that even the most unpractised eye could scarcely fail to recognise the purpose of the erection. The wings of the building and its minutest ornaments will all be in character with the main building.

Again, no Frenchman would ever think of designing a schoolhouse like a Gothic cathedral. Such an adaptation is to him illogical, because on the face of it the schoolhouse would be a cathedral.

French architects, however, though upholding the sanctity of *ensemble*, or unity of design, are fully alive to the organic individuality of details. Vary the parts, they say, but let not the parts be foreign to the whole. Let the architect imitate God the Creator. Let his buildings be like the human body, one in purpose, infinite in useful and beautiful details.

But in order to build an edifice which will, so to say, be explained by its every part, the architect must breathe his conception into the minds of his men. Now, French workmen, true to their national genius, quickly kindle under their master's inspiration, and work up to it. Again, the public, who, in France, encourage artistic effort, will only do so with the sanction of artistic laws. So, in France, masters, men, and public are at one in carrying out with imposing unity the leading ideas of great plans.

In conclusion, English students of French architecture should approach French buildings with a conviction that the architect who has designed them can yield not only an æsthetic but a *generic* reason for their every part; in other words, that he can defend every detail of his plans on the score not only of individual beauty, but also on that of *appropriate* beauty, or *beauté raisonnée*. A French architect may err with respect to the end, but seldom fails in the means. There is judgment even in his mistakes, for his mind is a repertory of classified ideas. Whosoever wishes to do justice to French architectural thought must consider its errors not as the shortcomings of ignorance, but as sophisms, the upshots of scientific though inaccurate deduction. LAWRENCE HARVEY.

École des Beaux Arts.

THE FOREIGN GALLERY, PALL-MALL.

THE collection of pictures by French and Flemish artists now exhibiting in the Gallery, 120, Pall-mall, though small (219 pictures) is one of great interest, and includes several pictures of remarkable excellence and beauty. One of the most striking is M. L. Perrault's "The Orphans,"—a work of art full of poetry and pathos, and finished with the most minute care. It shows a group of girls, three in number; the eldest is attired in deep mourning, and surveys her sisters with feelings of extremest sorrow, while in her arms she carries a chubby-faced infant. Upon her shoulder rests the head of her younger sister, and the face, directed upwards, seems searching in hers for some gleam of comfort, while the right arm, thrown carelessly over the shoulder of the third, binds them together in a united family circle. The grief of each, differing in degree until it is lost in the happy repose of the sleeping infant, is admirably told, while the whole effect of the picture is such that it recalls one to again and

again gaze upon it. There are two small works by Meissonier, one called "Qui va là?" the other a "Halbardier on Guard,"—all life. "A Quiet Spot in the Forest of Fontainebleau," by Rosa Bonheur, displays the haunt of the stag beneath a canopy of foliage, where the earth is a carpet of moss and herbage, and the sunlight steals in, subdued by the intricate screen which nature has wrought with the green leafage. The picture is more truthful than effective. The "Burgomaster's Daughter," by M. C. Bisschop is a finished study. The light which breaks upon the head of the figure has a marvellous effect. "The Normandy Flower Girl," by M. J. Portaels, is also an admirable picture. "The Remedy," by L. Israels, tells its own story. The wife is stricken with disease; the husband, a French fisherman, sits by the bedside, with his daughter between his knees, gazing with earnestness upon the wan face of the patient to ascertain if the drug which the nurse has but just administered can have already worked a cure; while in the foreground a child, unconscious of the sorrow which hangs about the apartment, is sporting with the fishing-tackle that the father has thrown idly by. Of rare beauty is Merle's head of "Veronica." As a piece of manipulation it is not remarkable, but the expression is divine.

There are two small works by Edouard Frere, "Helping Herself," and "The Family Scrap-book." A group of little girls form a circle round the family treasure, and each face is alike expressive of the delight which the picture-book affords. The mother gazing fondly on her infant, by Jourdan, will be understood and appreciated wherever womanly graces and the innocence of children are welcome.

Pictures by Alma Tadema, Henriette Browne, J. Goupil, G. de Jonghe ("Playing from Memory"), Louis Gallait, J. Bertrand ("Virginia Drowned"), also demand notice; and even now we have omitted mention of two of the most complete works in the gallery, "Nonchalance" and "La Visite," both by Alfred Stevens.

Some water-colour drawings on the first-floor, serve to show what foreign artists are doing in that walk of art.

OWEN'S COLLEGE, MANCHESTER.

THE design for the first portion of the new buildings for Owen's College is now complete, and the works themselves will shortly commence.

The site is about a mile to the south of the centre of Manchester, on the west side of Oxford-road. It is bounded on the north by Coupland-street, and on the south by Burlington-street. At its east or Oxford-road end, it is some 120 yards in width.

The original idea was to make the buildings surround a large quadrangle; but this idea has been modified, it being found that the cost of the work would exceed the means at the disposal of the committee; and it was considered by them that the present requirements of the College would be more conveniently met by the erection of a compact range of buildings, with space behind for less sightly, but not less necessary, structures, and in front for others of a more ornamental character, which will, doubtless, soon be required.

The design about to be carried out, and which we have now to describe, has been brought to maturity after long and careful consideration on the part of the committee and professors, in conjunction with their architect, Mr. Alfred Waterhouse. The scheme consists of a main block of varying width, and upwards of 300 ft. in length, set back about 200 ft. from Oxford-road, and running parallel with it. It is intended that this should ultimately form the western side of a quadrangle or court, 200 ft. in length, by 100 ft. in width. The three other sides will not be enclosed at present; but when the entire scheme is carried out, there will be a natural history museum on the south; a library, examination-hall, and other departments on the east (Oxford-road front), where the chief architectural features would be introduced; while to the north there would be space for additional lecture and class rooms, or for the medical school.

At the rear of the main block is a large space of irregular shape, averaging 200 ft. in width, on the south of which (Burlington-street side) the chemical laboratories will also be at once erected in a detached building, hereafter described, while on the north ample space will be left for an extension of the laboratories, if needed, for various subsidiary building, and for a gymnasium.

The main block, containing as it does the various lecture-rooms, class-rooms, &c., has been planned so as to secure the maximum of the three essentials,—light, quiet, and airiness. Wherever possible the class-rooms turn their back upon Oxford-road, which is always busy and noisy, while a wide corridor of communication runs along the building on that side. On the basement floor this corridor is unbroken; on the upper floor it is cut in twain in the middle by the library, on the first floor, and by a large arts' class-room on the ground-floor.

This division of the corridors has been devised, amongst other reasons, to prevent their being used too freely for general traffic. Each half is approached by a separate staircase entered from a porch on the east side. On special occasions, however, or whenever required, the whole of each floor can be thrown *en suite*.

In arranging the accommodation, one important consideration has been kept constantly in view. Inasmuch as the requirements of the college may vary,—one department needing an increase of space, another requiring less,—the rooms have been so arranged as to be put to different uses, if need be, without any structural alteration whatever being involved. As the full development of the scheme is reserved for the future, some ingenuity has had to be exercised to make temporary provision for wants which will be more adequately met when the whole of the buildings contemplated shall have been erected. Thus, one large arts' class-room, not required as such at present, will be used as a temporary library; another large room in the basement will form a temporary dining-hall.

The slope of the ground has favoured the arrangement of the basement story as planned. On the western side the floor is above the level of the ground; on the eastern side the rooms will look into areas 26 ft. wide, so that the story is practically entirely above ground. On this floor will be placed the engineering workshops and museums, the students' temporary dining-room and common room, the natural philosophy workshops, rooms for students' boxes, lavatories, cloak-rooms, &c.

The southern extremity of the building is devoted, on the basement and ground floors, to the chemical theatre,—a room 66 ft. by 40 ft. The professor's table is at the western end, on the level of the basement floor. The floor of the theatre rises eastwards, until it reaches the level of Oxford-road. This room will be lighted by windows on the south and west sides, all fitted (as well as those of the natural philosophy lecture-room) with iron shutters, to admit of the rooms being darkened at pleasure.

The other principal rooms on the ground-floor will be the engineering drawing-room and lecture-room, natural philosophy rooms, a large arts' class-room, with rising floors; the board-room, and secretary's office.

On the first-floor there are three large arts' class-rooms, professors' rooms (which, for the most part, are common rooms), the temporary natural history museum, temporary library, students' reading-room, and various small arts' class-rooms.

There is considerable accommodation in the roof, for which special uses will, no doubt, soon be found.

The chemical laboratories, in the separate building already mentioned, will form a block 95 ft. square. There are two large laboratories placed side by side, each of them 70 ft. by 30 ft. and 22 ft. in height. There are store-rooms below, and various subsidiary rooms adjoining the laboratories.

The professor's private laboratory is so placed as to command both the others, and there will be direct communication, by a covered corridor, between this laboratory and the table in the lecture theatre.

The dimensions of a few of the other rooms, and of the floors, may be interesting. The stories will be, except in special parts, of the following heights from floor to ceiling:—Basement, 15 ft.; ground-floor, 17 ft.; first-floor, 17 ft. 6 in.; rooms in the roof, 10 ft. The chief exception is the chemical theatre, which averages 28 ft. in height, and some of the large arts' class-rooms, which have been made about 22 ft. high, by a little scheming in the arrangement of the floors.

The four large arts' class-rooms are of the following dimensions:—One of them 40 ft. by 45 ft.; two 40 ft. by 33 ft.; and one 31 ft. by 35 ft.; that devoted temporarily to the library is 40 ft. by 45 ft. The students' reading-room is 34 ft. by 33 ft.; the engineering drawing-room, 52 ft. by 31 ft.; the board-room, 37 ft. by 30 ft.

There are in the buildings first to be erected 90 rooms in all, of which the chemical department takes 28; the natural philosophy, 9; arts' class-rooms, 9; engineering, 8.

Special care has been bestowed in maturing the scheme for warming and ventilating the buildings. In the sub-basement there will be hot-water boilers and a steam-engine; the latter to drive a fan for forcing fresh air (warmed in winter) into the corridor and lecture theatre. In the ordinary class-rooms there will be openings for ventilation above the doors, and all the windows will be double hung as sashes with a light above, hung on pivots, for summer ventilation, to open diagonally, so as to throw the fresh air upwards towards the ceiling.

The whole of the rooms will be warmed by hot-water pipes, but provision is made for the introduction of fire-places hereafter, if found desirable. Fresh air is also brought into the rooms behind the coils of hot-water pipes wherever practicable.

A special flue for the extraction of vitiated air will be taken from the ceiling of each room into large shafts in the roofs leading to ventilating turrets, in which steam cones will accelerate the draught.

Separate and particular arrangements have been made for warming and ventilating the chemical laboratories. A tower has been carried up above the roof, with large arcaded openings on each side, behind which a cowl will work, always presenting its mouth to the wind. This tower will bring a constant and ample supply of fresh air to the warming apparatus in the basement of the laboratory building. The smoke from this apparatus will be utilised for increasing the draught in the flue for the extraction of vitiated air. The warming of the laboratories will be effected like that of the other parts of the building, but from their own separate apparatus.

The style of the buildings, as might be presumed, is Gothic, of a collegiate and early type. The walls will be faced throughout with York stone, and the roofs covered with slate. The upper part of the central gable will be devoted to a clock-dial, and over the centre roof will rise a lofty flèche to be used for purposes of ventilation. A similar feature, but lower, will rise over the chemical lecture theatre. Square-headed windows are the rule, except in the corridors and staircases, where they are pointed.

Internally, the most interesting architectural features will doubtless be the staircases, which are arranged in large octagonal bays, 33 ft. by 14 ft., and cut off from the corridors by arcades of double columns.

The floors of the buildings throughout will be fireproof on the Dennet-arch principle.

OVERSIGHT IN THE TOWER SUBWAY.

IF the Tower subway is to be the prototype, as we are told, of a new class of thoroughfares, it may be hoped it will, nevertheless, remain the only one with either *shafts, lifts*, or a *change of vehicle*, in so short a journey. To explain the exceedingly small necessity for any of these, let us first add to the quarter-mile of the present subway proper, the two shafts of 50 ft., and we find there are 1,420 ft. of way, all iron-lined, I believe, and about equally large and expensive. Now, suppose that same 1,420 ft., in one uniform tube, making an *eighth of a circle*, all castings from end to end on one model, the radius of curvature being everywhere 1,808 ft. The chord of this octant, or distance between entry and exit, would be about 1,391 ft.; carrying each, say 12 yards, further from the river than at present. If the river's width be 1,200 ft., the descent under each bank, till getting under water, would be some 36 ft., and the whole descent, to the middle, 139 ft., which would keep all well free from the bed materials, and down in the eocene London clay, and more so the greater the water pressure. Yet the single unchanged omnibus would emerge on a short level terminus *above ground*; and all inconvenience from the tilting to an inclination of 22½° at starting and arrival, would be obviated by making it in three or four separate bodies, each seating four, and hung on trunnions, so as to keep vertical. The utmost utilisation of gravity as motive power would also be made, by simply letting it acquire all the speed and run as far as

i would, which ought, with good wheels and rails, to be full seven eighths of the journey, when it would be caught by a clip, and pulled the remaining eighth by steam-power.

It is well known that without friction or resistance, the quickest way, or "*Brachystochrone*," from any spot to any other, would be part of a cycloid if the second point be lower than the first, or a whole cycloid if on the same level. Now, if you only cut from a cycloid one-eighth at each extremity, the remaining three-fourths contain practically *no* change of curvature, but so closely approach a *quadrant of a circle*, that the finest workman could hardly distinguish them. But the brachystochrone *allowing for friction*, is always less curved than the cycloid, and still *more* approximate therefore to a smaller circular arc than this was to a quadrant. Thus it is seen how very near an octant must be to the theoretically *very best* subway for economy of power.

E. L. G.

THE TRADES MOVEMENT.

London.—Another meeting of the delegates from the carpenters' and joiners' societies in furtherance of the nine-hours movement has been held at the Duke of York Tavern, Lambeth; Mr. Sinclair in the chair. The delegates gave in their reports, showing the rapid progress of the movement. District meetings had been held at Brixton, Chelsea, Paddington, Finsbury, Marylebone, and King's-cross, and the new code of working rules had been well received at each meeting. After the transaction of provincial business, and appointing deputations to attend district meetings, the proceedings concluded. The aggregate meeting will be held shortly after Easter.

Barnsley.—The six months' notice, which was given by four of the master joiners in Barnsley to their men, to work one hour longer per day during the summer months, has expired, and a number of men have left their work. The masters who gave the notice were Mr. John Goodyear, Mr. John Carr, Mr. George England, and Mr. Thos. Jacques. The men up to the 31st of March commenced work at seven o'clock in the morning, and the masters are wishful that they should commence work every morning (except Monday) at six o'clock from the 1st of April to the 30th of September, and at seven o'clock every morning in the winter half of the year, leaving work at four o'clock on Saturdays. Some of the men refused to accept the change, and left work, but others still remain; and, seeing that the trade is anything but active, it is not expected that the dispute will continue long.

Edinburgh.—A correspondence as to the employment of unskilled labour in the painting trade has taken place between the operative painters and their masters. It was commenced by the workmen presenting a petition to the masters, asking them to put a stop to the system of employing unskilled labourers,—a system which, in the opinion of the workmen, was the cause of much annoyance both to them and their masters, and was also a source of injustice to the public. It was well known, the memorialists said, that many of the labourers referred to were in the habit of passing themselves off as journeymen, and this they felt did much injury to those who had served a full term of apprenticeship to the trade. To this the masters, through the secretary of their society, answered that they were quite able to manage their own affairs, and that the workmen had no right to interfere with their mode of conducting their businesses. They at the same time took the opportunity of denying that labourers were employed to do skilled work. The workmen, they thought, had themselves very much to blame for the state of matters that existed, they having refused to do certain kinds of work which they considered only suitable for labourers. The secretary of the operative painters, in replying to this communication, said that the workmen had not alleged that skilled labour was done by labourers. What they had said was that labourers were put to do work which painters should do, and which they did not object to do. They denied that they had any wish to interfere with the manner in which the masters conducted their businesses. As yet the masters have made no further communication on the subject.

Glasgow.—A conference meeting of the Glasgow master joiners and operatives has been held in the Religious Institution Rooms. Mr. Walter Bannerman on behalf of the former, and Mr. John Bennett on behalf of the latter, were appointed co-chairmen. A printed copy of the proposed working bye-laws, made out by the operatives, was handed to each employer present. After a friendly conversation, the employers intimated that they were empowered to propose that the whole matter in dispute should be submitted to an arbitrator appointed by Mr. Henry Glassford Bell, Sheriff of Lanarkshire, and that his decision should be final and binding on both parties. The operatives, on their part, stated that they had no power to refer the matter to arbitration. Mr. Bennett said that it had been spoken of amongst the operatives to reduce the working hours during December and January to eight hours per day, and five hours on Saturday. Each party agreed to submit the result of the conference to their respective bodies, with a view of arriving at an amicable settlement. A meeting of the joiners was held next day. After a long discussion, two resolutions were adopted, the first being:—

"That we consider the offer of arbitration made by our employers unnecessary, so far as our working hours are concerned, our time being our capital, and consequently our private property. No arbiter has the power to decide against the expressed wish of a man how many hours he shall work. Should our employers find it impossible to arrive at an amicable settlement with regard to wages or other matters connected with the present dispute, we are quite willing to accept arbitration in the way they have indicated."

Stirling.—A meeting of master builders has been held in Stirling for the purpose of considering a demand by the operative masons to have an advance made upon their wages of ½d. per hour from the 1st of April. All the master builders in the town were present. The circumstances of the trade were fully considered, and, after a discussion, it was unanimously resolved to refuse the demand.

Perth.—A meeting of the master masons has been held, at which it was unanimously resolved not to comply with the demands of the men, numbers of whom are daily leaving the town for other places in search of work. The men assert that the rise of wages sought, from 5½d. to 6d. per hour, would only place them on an equal footing with the workmen of other towns. No agreement has yet been made between the masters and journeymen masons with respect to the rate of wages. The masons employed on the Scottish Central section of the Caledonian Railway have resumed work, the railway authorities having raised the wages to 6d. per hour.

Arbroath.—Some months ago the operative masons in Arbroath resolved to begin the nine-hours system on the 1st of March last. Several did so, but as a number of employers declined to act on the new plan, it has been found necessary to return to the ten-hours system. At a meeting held the other evening, the operatives resolved to do this, but at the same time stated that they would renew their claim to have the working-day reduced to nine hours at the first opportunity.

ST. PANCRAS STATION AND ROOF.

IN the course of a paper on this subject, read at the Institution of Civil Engineers, by Mr. W. H. Barlow, Mr. Charles B. Vignoles, President, in the chair, the writer said,—

In arranging for the strength of the roof, as it was required that the arch should be capable of maintaining its own weight, without any intermediate connexions with the tie, it was considered expedient to adopt a low rate of pressure upon the metal, with a large assumed weight acting in addition to the weight of the principal. With this view the arch was designed so as to be capable of bearing an assumed load of 70 lb. per square foot measured on plan, in addition to the weight of the principals, with a stress on the metal not exceeding 3½ tons per square inch; or, what amounted to about the same thing, a load of 56 lb. per square foot, with a stress of 3 tons per square inch. The assumed weight of 70 lb. per square foot on the surface carried by the arched portions of the rib, viz., 7,040 square feet, amounted to 220 tons; and, adding to this the weight of the open part of each arch between the springings, or 35 tons, the total load became 255 tons. The line of pressure formed an angle of 55° with the horizontal at the springing, and therefore the pressures were 155 tons at the springing and 89 tons at the crown. The sectional area of the upper flange of the rib was 23 square inches, and that of the lower flange of the rib also 23 square inches, so that the stress on the metal with the assumed weight of 70 lb. per square foot was 3·37 tons per square inch at the springing, and 1·94 ton per square inch at the crown.

The cost of the roof, as it stood in the finally settled accounts, excluding the screens, was 53,483*l*. The north screen and gable had cost 7,375*l*., while a second screen and gable for the southern end, so as to separate the passenger station from the hotel buildings, had cost 8,507*l*. As the area within the walls measured on plan was 169,400 square feet, it followed that the cost per square of 100 ft. was, for the roof, excluding the screens, 31*l*. 11*s*.; for the north screen, 4*l*. 7*s*.; and for the extra rib and south screen, 5*l*.

The brickwork of the substructure of the station, and the whole of the works of the upper and lower lines of railway for a distance of three-quarters of a mile northwards, were let to the Messrs. Waring, and had been carried out under the superintendence of the author's principal assistant, Mr. Campion; while the iron-work of the bridges and of the lower floor of the station was in charge of his assistant, Mr. Grier. For the details of the roof the author was in a great degree indebted to Mr. Ordish. The Butterley Company were the contractors for the roofing and for the lower floor, Mr. (now Sir) G. J. N. Alleyne being their manager, and Mr. Clark their foreman on the works.

THE DRAWINGS OF THE HOUSES OF PARLIAMENT.

AT a special meeting of the council of the Royal Institute of British Architects, held on Monday, the 14th March, 1870, it was resolved,—

"That it having been referred to this council to advise a member whether he is bound to comply with a requisition to give up all the contract plans and drawings of a building (to which he had acted as architect), and all other papers necessary for affording a complete knowledge of the building, and of the works carried on in connexion therewith; the council express their most decided opinion that the rule and custom of the profession is, that all the drawings and papers of an architect, prepared for the purpose of erecting a building, are, and remain, the sole property of the architect."

IN the House of Commons a few nights ago, Mr. Tipping asked the First Commissioner of Works if it was true, as stated in the *Builder*, that he had demanded of the architect the drawings of the Houses of Parliament; and if he was aware that the Royal Institute of British Architects had declared that such a demand was not in accordance with professional custom, according to which such drawings are the property of the architect? Mr. Ayrton is reported to have said it was true that he had asked Mr. Barry to deposit in the Office of the Board of Works certain plans prepared by him for her Majesty's service and paid for by the public. It was also correct—at least he had been so informed—that certain architects had resolved that they were entitled to keep plans which they had prepared for other people who had paid for them. He had referred all the papers to the usual advisers of the Board, in order to ascertain what the rights of the Crown were.

Mr. E. M. Barry has since written:—

"I have just seen that the First Commissioner of Works stated, on Thursday night, in answer to a question, that 'he had asked Mr. E. M. Barry to deposit in the Office of Works certain plans which were prepared by him for her Majesty's service and paid for by the public,' and that he had placed the matter in the hands of his legal advisers.

As I have offered to comply with Mr. Ayrton's request, unusual though it be, to give him my drawings which I have prepared for the Government during an engagement which has now lasted ten years, I imagine some error must have occurred in reporting the above answer. It describes inaccurately the demand that has been made upon me, the nature and extent of which (and the peculiar circumstances under which it has been preferred) will be apparent when the papers which have been moved for on the subject have been laid before Parliament."

SIR,—The following is from the *Echo* of Saturday last:—

"We are heartily with Mr. Ayrton in his conflict with Mr. Barry. The waste of public money by the professional employment of non-official persons has been enormous. The Land Revenues, the Ecclesiastical Commissioners, and the Board of Works accounts are full of disgraceful warnings on this point. Mr. Ayrton has most properly placed the charge of the Houses of Parliament under the care of the salaried officers of the Board of Works, and Mr. Barry, who seems to consider himself as a sort of hereditary seneschal of the New Palace of Westminster, is offended. But the fight between Mr. Ayrton and Mr. Barry is, as we understand it, over the working drawings of the building. Mr. Barry says, that by the custom of the profession these belong to him, as inherited from his father. Then, we say, the sooner Mr. Ayrton, with the force of law, explodes such a custom, the better. If it is proved that the nation has paid for the work, and

has been charged with the cost of the material of those plans, they surely belong to the people. The constructive drawings of any building, whether they are claimed or not, certainly ought to belong, and by natural principles of equity do belong, to the individual who has satisfied the architect's charges."

I think it would be well for Mr. Barry to contest his right to the working drawings of the Houses of Parliament, now that it is the acknowledged custom, in and out of the profession, to consider the drawings of a building the property of the architect. At the same time, I do not think that architects, as a body, should stand by and see Mr. Barry, one of their number, victimised in the way Mr. Ayrton proposes; but they should come forward, and readily, with their money, if necessary, to defend a right long acquired by custom, and approved by the majority of employers. I, for my part, am willing to commence, with half a guinea, a subscription towards a fund for assisting Mr. Barry, should he be advised to defend his right to the drawings bequeathed to him by his father.

If, by the way, "the waste of public money by the employment of *non-official* persons has been enormous," why was the *official* Mr. Pennethorne discharged (as the public take it) to make way for Mr. Fergusson, and the *official* Mr. Fergusson to make way for Mr. Douglas Galton? This is a system which, I trust, as far as it affects architects' rights, will be withstood to the utmost.

I enclose my card. In case a subscription should be required, I trust some known member of the Institute would take the position of hon. secretary to the fund; should, however, no one be willing to come forward, I would act as hon. secretary *pro tem.* Ludovicus.

METROPOLITAN BOARD OF WORKS.

ARCHITECT'S SURVEYOR—ASSISTANT ENGINEER—MUNICIPAL GOVERNMENT.

At their last meeting the Board proceeded to the election of a surveyor in the Superintending Architect's Department, and eight candidates were submitted, from whom the Board were to elect one, and Mr. John Thomas Lepard was the successful candidate for that office.

A report was brought up from the Works and General Purposes Committee, stating that the committee had considered the letter from Mr. E. Cooper, assistant engineer, applying for a retiring allowance, and that they had ascertained, after conference with the engineer, that it will be unnecessary to fill up the vacancy occasioned by Mr. Cooper's retirement, and recommending that the services of Mr. Cooper be dispensed with, and that a retiring allowance of 420*l.* per annum be granted to him for life.

After a long discussion, in which several amendments were moved, the recommendation was put and agreed to.

A report was presented from a committee of the whole Board on Municipal Bills, stating that, in the opinion of the committee, it is desirable that there should be one central municipal government, with jurisdiction over the whole metropolis; and that there should be a readjustment of the districts into which the metropolis is at present divided for the purposes of local government; recommending that the subject be referred back to the committee for further consideration as to the details, with authority to communicate with her Majesty's Government thereon; and that the foregoing propositions be considered by the Board at their meeting on the 8th of April.

The report was received and adopted.

COMPETITIVE TRIAL OF STEAM FIRE-ENGINES AT GLASGOW.

An important competitive trial of steam fire-engines took place at Glasgow on the 18th of March. The civic authorities of that city issued an advertisement on the 1st of October last for a steam fire-engine, and two were offered to them, one being from Messrs. Shand, Mason, & Co., and the other from Messrs. Merryweather & Son, both of London. A competitive trial of these engines was then proposed and agreed to; and Mr. Conner, of the Caledonian Railway Company; Mr. More, hydraulic engineer, of Glasgow; and Mr. Bryson, the chief of the Glasgow Fire Brigade, were appointed judges. At the request of several correspondents, we print their report:—

"The engines having been taken from the fire-engine station to the weighing machine, fully equipped, were found to weigh (by certified report from weigher) as follows:—Shand, Mason, & Co.'s engine, 42 cwt. 3 qrs.; Merryweather & Son's engine, 48 cwt. 2 qrs. The engines were then placed in position ready for testing, their suction-pipes for drawing water being put in the river Clyde. To each engine was attached 280 ft. of delivery-hose, supplied by their respective makers. The nozzles were—for Shand, Mason, & Co.'s engine, No. 20, equal to 1 4-16 in.; Merryweather & Son's engine, No. 21, equal to 1 5-16 in. These branch pipes were then laid upon a frame erected for the purpose, both being at the same angle, and securely lashed to said frame. All being in readiness, the word to commence firing was given at 12 h. 51 min., and in 9 min. 45 sec. Shand, Mason, & Co.'s engine commenced working, with gauge showing 100 lb. pressure of steam per square inch. Merryweather & Son's engine commenced work in 10 min., with steam at 100 lb. pressure per square inch, as indicated by gauge. Both engines were then put under test No. 2, so as to show the greatest distance water could be thrown horizontally. During this test notes were taken repeatedly and accurately of the distances each engine was throwing the stream of water, and the result was, at the completion of the test (which lasted one hour), that on an average the distance attained by Shand, Mason, & Co.'s engine was 145 ft.—maximum, 149 ft.; Merryweather & Son's engine was 98 ft.—maximum, 112 ft.; the average pressure of steam being, for Shand, Mason, & Co.'s engine, 140 lb. per square inch—maximum, 150 lb.; Merryweather & Son's engine, 97 lb. per square inch—maximum, 140 lb.; and the average water-pressure for Shand, Mason, & Co.'s engine was 115 lb. per square inch—maximum, 125 lb; Merryweather & Son's engine was 96 lb. per square inch—maximum, 120 lb. The engines were then put under test No. 3, which was to show their action with the branch pipes set vertical; in this trial Merryweather & Son, with consent of Shand, Mason, & Co., altered their nozzle from No. 21 to No. 20 (small, equal to 1 7-32 in.), with the following results:—Shand, Mason, & Co.'s engine showed an average excess of height in the stream of water thrown over that thrown by Merryweather & Son's engine of 12 ft., the maximum being 15 ft. The average steam pressure during this trial (which lasted 20 minutes) being—for Shand, Mason, & Co.'s engine, 149 lb. per square inch—maximum, 160 lb.; Merryweather & Son's engine, 110 lb. per square inch—maximum, 140 lb. Tests 4, 5, and 6 were then combined by general consent, and arrangements made for each engine to throw two jets of water through the Glasgow Fire Brigade hose (four lengths to each jet), fitted with bayonet couplings and joints, the nozzles being all of a uniform size,—viz., ¾ in. diameter. The engines were then started simultaneously at 3 h. 13 min.; but the water pressure was so great that at 3 h. 15 min. (two minutes after starting), one of the hose attached to Shand, Mason, & Co.'s engine burst, and in 15 sec. thereafter Merryweather & Son's engine also burst a hose; thus bringing this trial to a close in 2 min. 15 sec. After these tests had been concluded, we subjected the engines to various tests, as to speed, power, &c., and also allowed the competitors to show the capabilities of their engines to the utmost. This being done, the trials were brought to a conclusion; and we have now to report as follows:—Boilers and fuel: both boilers are strong and well-constructed, admirably adapted for rapid steam raising and maintaining steam at a high pressure, as the foregoing figures indicate. The coal consumed during the trials was, for Shand, Mason, & Co.'s engine, 8 cwt.; Merryweather & Son's engine, 9 cwt. 0 qrs. 2 lb. We may mention, however, that Shand, Mason, & Co.'s had a stoppage for 1 min. 40 sec., which will somewhat reduce the apparent advantage over Merryweather & Son's. As we do not deem it necessary to trouble you with mechanical details, we avoid entering into any description of the respective engines, but in passing may say that Merryweather & Son's has two direct-acting pumps—Shand, Mason, & Co.'s having three. This gives the latter the benefit of a more continuous stream of water, and greater regularity in working; and whilst both engines are good specimens of engineering, we are inclined, in accordance with the results indicated in the former part of this report, to give, after due consideration, our decided preference to Messrs. Shand, Mason, & Co.'s engine."

The Watching and Lighting Committee, to whom this report was made, expressed approval of it, and recommended that the engine of Messrs. Shand, Mason, & Co. should be purchased, and the minute of the committee to this effect was unanimously adopted at the meeting of the Police Board held on Monday last.

THE NEWTON MARKET COMPETITION DESIGNS.

The local board of Newton have selected the designs furnished by Mr. John Chudleigh, of Exeter, bearing the motto of "Perseverance," and by Mr. James Chenhall, of Newton Abbot—"As you like it"—for the premiums of 25*l.* and 15*l.*, as being the best two designs for the new markets. The whole of the designs sent in have been submitted to public opinion, which was pretty strongly expressed in favour of those furnished by "Common Sense" and "Atlas."

"Perseverance" (Exeter) arranges the buildings in two blocks, the axis of the larger being parallel to the old market buildings. The corn exchange occupies the west end, and the principal entrance into the market is through it, the door having a bell-cot 30 ft. high over it. The walls are to be built with limestone, with granite and Bath stone dressings. The roofs are supported internally on iron columns 12 ft. high. Estimate, from 3,780*l.* to 4,300*l.* This obtained the first premium.

"As you like it" (Newton Abbot), second premium, places the corn exchange opposite the Bradley Hotel, and the markets are entered through an adjoining arcade with shops. All the markets are in a block, and open to each other, the fish-stalls being at no great distance from the butchers' stalls. The roofs have iron trusses, covered with slates, and every third principal is supported by an iron column, the intermediate principals being carried on "Warren girders." The ends of the five roofs are filled up with plain flat gables of limestone, on an entablature supported on pilasters, and have a very strange appearance. The new road from Courtenay-street is continued across the Lemon on a bridge, the abutments being built of brick, each abutment having seven counterfoils carried up their full size to the top level of the abutment, which is made sufficiently strong to resist the thrust of an arch of 40 ft. span, but supports seven wrought-iron girders, 17 ft. 1 in. span, and 18 in. deep. The author calculates the cost, including the bridge, at 4,900*l.*

"Common Sense" (Torquay) supplies a design which has attracted, as already mentioned, attention. The chief elevation faces Market-street, the entrance into the markets being in the centre, with a handsome clock-tower over it. On one side of the entrance is the corn exchange, and on the other three shops. He also gives a perspective view of the great hall, which is 45 ft. in span, and 170 ft. long, and has its roof supported on laminated plank ribs. Estimate, 5,000*l.*, the sum named by the Board.

"Atlas" (London) has taken great pains in getting up his design, which shows a road leading from Market-street to the new approach-road from Courtenay-street, midway through which is an octagonal open space, with the markets ranged around it. The plan could be adapted to the ground by a slight alteration. Estimate, 3,960*l.*

Sir,—With reference to this competition, I think it right to mention that rumour states the first premium was awarded to the son of a member of the local board (and I believe a *pupil* in an architect's office); the second to a local man, who also is said to have influence on the board.

One of the Competitors.

MANAGEMENT OF COMPETITIONS.

MADELEY WORKHOUSE.

The author of the design for the proposed new workhouse in Madeley, Shropshire, placed second, complains that while the instructions pointed out that economy in erection was a point to which the guardians attached special importance, they selected a design, the cost of which was estimated at 600*l.* or 700*l.* more than that of any other submitted: further, that, while the instructions said, "one perspective view of the exterior may be sent in tinted only in sepia or Indian ink," the authors of the selected design forwarded "a highly-coloured perspective." The correctness of these statements is denied by the Clerk to the Guardians; but, admitting it to be proved, it is clear to us Mr. Griffiths could not sustain at law any claim for compensation. The guardians by the instructions issued bind themselves to nothing. As to the coloured perspective, they might say it was not looked at. The permission they gave to each competitor to send in one perspective view tinted only in sepia or Indian ink did not compel each competitor to send in such a view, and the coloured perspective not being what was admissible, was turned, they might say, aside. The discredit (we are, of course, supposing the assertion correct) would rest in such a case on the competitor, who, in face of such an intimation, should seek to steal a march by sending in a coloured view. Architects should look to the instructions and stipulations before they compete, and decline to send designs except under proper arrangements. As it is now, they go in on the mere chance of a "toss-up," and often find they do not get even that, the toss having been settled against them before they began the game.

IN PARLIAMENT.

The Government Offices.—In reply to Lord Redesdale,

The Marquis of Lansdowne stated that it was intended to proceed with the buildings in Downing-street this year, and 8,000*l.* would be voted for the purpose, this amount representing the maximum extent of the buildings which could be erected within that period. There was every desire to push on the work, but it was impossible to complete so large a mass of buildings as that eventually to be completed, in one year. Arrangements had been made for the purchase of the whole of the houses in King-street and Parliament-street required for the extension of the public offices, the greater part of the purchases having been already concluded, and 18,000*l.* which appeared in the estimates this year representing the whole of the outstanding purchases. A design for the extension of the buildings was placed in the library of the House of Commons last session, and would, if the noble lord wished it, be placed in their lordships' library for inspection. With regard to the house fronting St. James's Park (to which satirical allusion had been made), it was built on Crown property, but no additional land had been inclosed. The property of the Crown was bounded by an iron railing, and this had not

been removed. It was under the control, not of the Board of Works, but of the office of Woods and Forests, and it was within their competence to approve designs of buildings, including the projecting bay window to which the noble lord alluded. — Lord Redesdale wished to know whether there was any design for the utilisation of the ground in Charles-street.—The Duke of Argyll said part of this site belonged to the Indian Government, which contemplated the erection of a museum there. The present museum building was very inadequate, and it was increasingly important for the exhibition of the commercial products of India to erect a better one. In the present state of Indian finances, however, no money could be spared for this purpose.

The Wellington Monument.—Earl Cadogan moved for copies of any correspondence which might have recently passed between her Majesty's Chief Commissioner of Works and the surveyor of St. Paul's Cathedral, with reference to the monument to the late Duke of Wellington, in course of erection in that church; a return of copy of agreement entered into between the Board of Works and Mr. Stevens, the artist selected to execute the work; payments made to Mr. Stevens on account of the work itself, or to others for purposes in connexion with it; dates of payment; sum originally voted by Parliament for the erection of the monument; and balance remaining available for the completion of it.—The Marquis of Lansdowne said the Government would not object to the return if the noble lord pressed for it, but it being expected that the work would be completed within a year, and it being probable that the original terms would not be adhered to, it would be better to await its completion before entering on an inquiry into the mode in which it had been carried out. The motion, however, was ultimately agreed to.

The New Refreshment Rooms.—The House of Commons committee met on Wednesday and adopted the Board of Works' plan for the alteration of the rooms adjoining the library (in opposition to that proposed by Mr. Barry), so as to fit them for dining and refreshment rooms for both Houses. The works will be proceeded with in August. Mr. Barry applied to be heard in evidence by the committee, but his offer was declined, on the ground that the committee had to judge of plans, not to hear witnesses.

THE ARTS AND THE INTERNATIONAL EXHIBITION OF 1871.

PRINCE CHRISTIAN presided at a conference of artists, sculptors, decorators, and others interested in the fine arts, held on Wednesday, at the Society of Arts, to consider the representation of the fine arts in the forthcoming series of annual International Exhibitions.

His Royal Highness, in opening the proceedings, said—The special object of these fine arts exhibitions is to show how closely high artistic culture can be connected with works of industry. In modern times we have lost sight of this intimate alliance between art and industry, which was characteristic of Mediæval and ancient days; and what we are now aiming at is a revival of this wholesome alliance. We hope that these exhibitions will encourage the education of artistic talent in the direction of objects of utility of every description. Many instances may be quoted from history to show that it was not beneath the dignity of the most illustrious professors to combine the useful with the ornamental. Michelangelo was a sculptor, painter, and architect; so was Raffaelle. Leonardo da Vinci was an engraver, an architect, and painter; Francia was a goldsmith, engraver, and painter; Cellini was a goldsmith and sculptor; Holbein an architect, painter, and designer; Albert Durer a painter and engraver. Surely these great examples must stimulate people to the culture of arts in our own days.

Col. Scott explained very fully the details of the arrangements contemplated; and a discussion ensued, in which Mr. Redgrave, R.A., Mr. Millais, R.A., Mr. Henry Cole, Mr. Fahey, Mr. Stevens, Professor Hayter Lewis, Mr. Godwin, Mr. Hyde Clarke, and others, took part. On the motion of Professor Westmacott, R.A., seconded by Mr. Carter Hall, it was resolved—

"That this meeting, after having had explained to it the object of the intended international exhibitions, so far as relates to the section of fine arts, desires cordially to co-operate in carrying into effect the plans proposed."

The Lord Chancellor made an interesting address in moving a vote of thanks to the chairman, which was carried unanimously.

We understand that Col. Scott has received a letter from Brussels, in which it is stated that a commission has been formed in Belgium, under the presidency of the Count of Flanders, for the purpose of organising a display of specimens of Belgian handicraft, to be included in the forthcoming International Exhibition to be held in London.

PROPOSED CATHEDRAL, BRITISH COLUMBIA.

STEPS are now being taken for the rebuilding of the cathedral at Victoria, the capital of British Columbia, which cathedral was recently destroyed by fire. The Bishop of Columbia, who is on a visit to England, is endeavouring to raise sufficient funds, in addition to what has already been obtained, in order to commence the cathedral at an early date. The Rev. Perceval Ward, rector of Compton Vallence, Dorset, a relative of the Bishop of Columbia, has promised to make a donation of the drawings of the proposed cathedral, which are now in course of preparation, by Mr. Ferrey, F.S.A. In plan the edifice, in its entirety, will consist of a nave 96 ft. by 28 ft., with span-roofed aisles, 25 ft. wide; choir, 42 ft. by 26 ft., having twelve stalls. The sacristy, 24 ft. by 16 ft., and the organ-chamber, will be on the north side, and the seats for the governor of the colony in an aisle on the south side of the choir.

Owing to the prevalence of heavy western gales there will be no doors to the west, but the principal entrance will be by a large south porch. The tower, which is intended to be of lofty proportions, will stand at the south-west angle of the nave. When complete the cathedral is intended to afford accommodation to about 1,200 persons. The style adopted will be transitional between Early English and Decorated, sufficiently modified to suit the requirements of the climate.

PROFESSOR SCOTT ON VAULTING, AT THE ROYAL ACADEMY.

LECTURE III.—*concluded.**

I HAVE hitherto dwelt wholly upon vaulting which has none but what I have termed *functional* ribs;—that is to say, such as have a specific utility; as transverse ribs to mark the boundaries of the bays, and to strengthen the vault in its main span; diagonal ribs to fortify the angles of intersection; and wall-ribs to support the vaulting surfaces at their junction with the walls; and occasionally ridge ribs, though these more properly belong to the succeeding stage. The next stage in the history of vaulting is that in which other than merely functional ribs are made use of,—intermediate ribs, in fact, to subdivide the spaces between those used during the previous period.

In square vaulting, *one* such additional rib is usually introduced in each space. In very oblong vaults *two*, and even *three*, were often introduced in the side spaces, though only one in the middle spaces. It is clear that this addition necessitates the use of ridge ribs, as, without them, the point at which the intermediate ribs meet at their apex would want abutment. So reasonable, indeed, was this motive, that we often find the ridge rib to have been omitted between the intermediate and wall ribs, because there its use ceases.

One thing which followed the use of these additional ribs was the curious serrated plan of the filling in. The oblique position of these ribs would, if the plan of the filling in remained unaltered, cause the fillet or reveal of the rib nearly to vanish on one side, and to become very wide on the other. This led them to change the plan.

On looking at the top surface of vaulting where the ribs are visible, it is at once seen that this was also necessitated by a structural cause, as without it the filling in would not rest well upon the ribs.

No better specimen of this form of vaulting can be referred to than that of the Presbytery at Ely, built about 1240 to 1250, and the four bays immediately to the west of the crossing in Westminster Abbey, erected by Edward I. about 1280 to 1300. The latter is the more perfect, as having level ridges. The former, curiously enough, having ridges to the side cells which rise from the intersection towards the walls. I may mention that it is very common for vaulting with intermediate ribs to have ridges rising rapidly towards the central boss.

The use of these additional ribs became, from the latter part of the thirteenth century, rather the rule than the exception.

I may mention early specimens of it at Chester, both in the Chapter-house and in the Lady Chapel, the latter with raised ridges; but in each the addition being only in the side cells. The Chapter-house at Wells has the intermediate ribs added throughout to those of the more normal examples at Westminster and Salisbury giving its vaulting a peculiarly full and rich, though rather crowded, effect. Bosses are usually introduced at all points of meeting, adding greatly to the richness of the whole.

Though I have called these ribs *non-functional* such is the case only in a limited sense, for, though not necessary, they nevertheless do their work: they divide and strengthen the vaulting spaces, and tend to do away with the necessity (if such may be supposed to exist) for any great thickness of filling in. They form, in fact, a stone framework or centreing, with frequent supports on which the vaulting permanently rests. Nearly the whole of Exeter Cathedral is groined in this manner, and excellent specimens, though of rather late date, may be seen in the west and south walks of the cloisters of Westminster Abbey, and in the two vestibules through which the cloister is approached. These have the advantage of close proximity to the eye, which enables one to study them with facility.

The next step in the history of vaulting may be said to be wholly decorative in its motive. It is the addition of short cross ribs between those already described, and arranged in patterns, such as stars, &c., round the central bosses, adding much to the complexity and ornamental character of the vault, and making a further increase to the number of the bosses.

Wonderful skill is often evinced in the arrangement of these patterns, which, traversing the changing planes or surfaces of the vaulting, produce in the perspective an extraordinary diversity of effect. These ribs have received from Professor Willis the name of "Liernes," a term given by Philibert de l'Orme to the ridge-ribs (perhaps in common with these), but, as we are short of an English name for these cross-ribs, it comes in conveniently to our aid. The term means, I believe, in carpentry, a short joist or rail, serving as a tie to steady other timbers, which is very appropriate to its use (real or apparent) in vaulting.

We have a few excellent specimens of this class of vaulting in London; more particularly that of the St. Stephen's Crypt, and of a bay of the cloisters opposite the entrance to the chapter-house, both erected in the first half of the fourteenth century.

In the former both the intermediate ribs and the liernes are very subservient in size to the main ribs; which gives an excellent effect: indeed, I know of no work more studious in design and detail than that piece of vaulting.

The vaulting of three bays of the eastern limb of Ely Cathedral, built by Alan de Walsingham at about the same period, is also of excellent design, as is that of the chancel of Nantwich Church, in Cheshire.

I am imitating the last-named to a certain extent in timber in the vaulting of the nave of Chester Cathedral, where, though the springers exist, the vaulting has never been completed.

Liernes are not placed at right angles to the surface of the vaulting, but in a vertical plane; perhaps from the facility it affords for setting them out on the ground plan.

We find the same cause regulating the geometrical system adopted for setting out the stones forming the bosses, which had also to contain a short piece of the impinging ribs. Professor Willis, in his admirable papers on vaulting, gives in minute detail the method adopted, showing that, to facilitate the operation, they made the upper surface of the boss-stone *horizontal*, to serve as a sort of drawing-board on which to draw the plan of the intersecting ribs. I have tested this in several instances. In the western part of the nave at Westminster, there being no outer thickness of stone vaulting, the boss-stones appear, and their surfaces are horizontal. On sweeping away the accumulation of dust and rubbish which covers them, I found, sure enough, the centre and side lines of all the ribs carefully drawn upon them.

In the lierne vaulting at Ely, though there has been an outer thickness of stonework, it was cleared away in the last century for the sake of lightness, so that the boss-stones, once concealed, are now visible. On clearing them from obstructions, I again found, as at Westminster, the

* See p. 240, *ante*.

lines of the ribs (here much more complex), carefully set out upon the top of the stones. Each of these little stone tables, in fact, has drawn out upon it the bit of the full-size plan of the vaulting which its surface would contain.

The lierne vaulting, though commencing as early as the first quarter of the fourteenth century, was so popular as to be continued throughout the remaining periods of Gothic architecture, used side by side, and often in union with other and later systems. The same was naturally the case with ordinary rib vaulting, so that in later times we have at least *three* systems used contemporaneously.

I know of no specimens of lierne vaulting more charming than what we see in the oriels of the halls of Crosby Hall and Eltham Palace, two sister works, unquestionably the work of the same architect, in the reign of Edward IV. They are of different plans. The one consists of five sides of an octagon, the other of a double square. The latter is on the system I have mentioned as having its central compartment raised like a square dome, to allow of the passage of the arch by which it opens into the hall. Both are carried out with the depressed arch belonging to their late period, and are treated with exquisite care and taste.

At Gloucester, in the choir, and Winchester, in the nave, this manner of vaulting assumes a very peculiar form; the side cells falling in at a low level, as what are called "*Welsh*" groins, leaving a width of barrel vault above, which is richly decorated by surface ribs and liernes.

That at Gloucester is a work of extraordinary magnificence. Its great speciality lies in its having two sets of diagonal ribs, the one on the ordinary system, the other comprising two bays each, and by their intersection defining the position of the *Welsh groins*. Thus the whole of the ordinary diagonal ribs, and half of the others, become mere ornamented mouldings on the surface of the barrel-vault, while to them is added a vast network of liernes, cutting it into an infinity of panels, whose angles are marked by a perfect army of carved bosses. The same was imitated at a later period in the lady-chapel.

In many cases, as in the western portals at Winchester, the upper portion of the groining assumes forms in which the lines of the true ribs seem almost forgotten. This is done to a very vicious extent in the choir at Wells. I may mention, as a late but beautiful example of this manner of vaulting, that of an exquisitely beautiful chamber adjoining the cloister at Windsor.

During this period two practices crept into use, to which it is not easy to assign precise dates, but which worked great changes in the art of vaulting. The one is the use,—especially at first for diagonal ribs,—of a curve drawn from two centres, which gradually brought down the aisles to excessively low proportions. The other practice was the use of portions of the same curve for several, or even all, of the ribs, either throughout their height, or at least for their lower part. The first-named custom was very natural in cases where the height of the vaults was limited by circumstances, as in St. Stephen's crypt. The diagonal ribs here were struck from three centres to the double rib, and in the next ribs from two to each single rib, and were also slightly segmented; that is to say, that they made an angle with the vertical line. They may be said to be a sort of imitation of the ellipse, as also is the case with the diagonals of the south and west cloister vaulting at Westminster.

The other practice, i.e., the repetition of the same curve for different ribs, is very curious and important in its results. It influenced in an extraordinary degree the *plan* of the vaulting at its intermediate heights. Professor Willis has called special attention to these half-height plans, as a matter of much importance to the effect.

If vaulting were carried out on perfect theoretical principles, and with the level ridge, these plans would be *rectangular*. The mere substitution of circular curves, unless made a little segmental, softens the angle of the square, while any modification of these curves produces its effect, one way or another, on this half-height plan. Professor Willis has illustrated this in a very interesting manner from the variations found in the cloisters at Norwich; a work generally of uniform design, but which, having been carried out at several different periods, the habits of the masons had undergone changes which produced very curious effects in this respect.

I may mention that where the ribs are of the same curve the ridges cannot be level; but that the use of the two-centred curve enabled them to repeat the same curve for the springers, but slightly to change it above by varying the position of the centre, from which the upper part of the curve is struck, so as to make the ridges level where it was desired.

This tendency to the repetition of the same curve led to the development of a most remarkable variety in vaulting, which especially characterised its later history in this country. I allude to that extraordinary form known as *Fan* vaulting.

It is self-evident that if a number of ribs of equal curvature spring at equal angles from a single pillar, the plan of the vault at any level will be a circle or a portion of a circle; and that they may be bounded at the level of their apex, or at any other level, by a circular moulding forming the whole into a figure, which I have had occasion to mention as having been generated at a very different date and from another cause, in the Norman vaulting of the circular Chapter-house at Worcester: a figure which I have defined as a concave-sided conoid, and likened to the flower of a convolvulus.

Now, the vaulting of any space, if set out in square compartments, and having ribs of similar curvature and at equal distances, may be formed into a number of portions of this figure by merely drawing semicircles and quadrants, as the case may be, from apex to apex of the surrounding arches.

A remainder of the ordinary vaulting, with rising ridges, exists, however, above this extemporised fan, and the whole has to be dealt with artistically on a system suited to the new form.

The general idea of such treatment of a fan or conoid may be said to be parallel to that of a circular or rose window. The ribs are viewed as radiating mullions, and are made to multiply in number as the circle expands, and usually to terminate round the outer boundary with a series of tracery forms like the heads of two-light windows. A good rose-window of late date, if imagined to be elastic, and drawn out from its centre into a conoidal form, would make a good compartment of fan groining; or a groining fan compressed into a plane would make a good rose-window. The interstices between the fans are filled up in various ways; either by circles of somewhat similar design, which sometimes drop down in little pendent fans, like stalactites from the roof of a cavern; or with a number of circles fitted together; or by continuing the diagonal ribs to their intersection with the ridges, and filling in the triangular spaces with tracery.

It is not, however, essential that the compartments so dealt with should be *square* in plan. If *oblong*, the semicircles or quadrants are drawn from the apex of the narrower and lower arches; and from the same centres portions of circles are drawn from the apex of wider and higher arches, assuming the form of an additional or outer zone of a rose-window, and intersecting on the line of the cross ridges, and thus forming a portion cut out of a great fan. Or the roof may be described as being formed of very large fans intersecting one another. Such is the famous roof of King's College Chapel, at Cambridge, but the frustums of fans are there bisected by vast transverse ribs, which were, no doubt, required for strength owing to the great scale of the vaulting.

The earliest instance which is known of fan vaulting is in the cloisters at Gloucester, dating from the beginning of the fifteenth century; indeed, Professor Willis thinks the invention due to a school of masons there. It, contrary to the usual practice, is formed with simple arches, instead of four centres. Each fan has but the transverse and wall ribs at its springing. At the next stage it forms the diagonal, then two intermediate ribs, and finally four more on each side of the transverse rib, and ends in little two-light window-like heads, while the space above is filled with four large cusped arches, and as many pear-shaped figures.

The limits of my lecture will not permit me to follow up this part of my subject as its importance demands; and my means of producing illustrations (for which I have heartily to thank several zealous and talented gentlemen engaged in my office, as well as one of my sons) have exhausted themselves before this laborious phase is reached. I have also to thank Mr. Herbert Poole, of Westminster, and Mr. Kabey, the clerk of works at the Chapter-house, for some most elaborate measurements of portions of the groining of the Abbey, which, if ever I publish these lectures, I hope to do justice to, but which were too much in detail for my present purpose. I must, therefore, content myself with referring to some of the most prominent examples.

I have already referred to the Gloucester cloisters and King's College Chapel.

I will next mention the central compartment or crossing of St. George's, Windsor, a most magnificent treatment of an oblong space. The aisles of the same chapel, with the smaller chapels adjoining, are charming examples, as are the aisles and small chapels of Henry VII.'s Chapel, and the cloisters of St. Stephen's, Westminster. Bath Abbey and Sherborne Minster are thus vaulted, and a whole century later, appearing long after date, comes the beautiful ceiling, or the staircase to the hall, at Christ Church, Oxford;—a square space groined on a central pillar.

In the construction of the vaulting of these later periods, we have a curious instance of the manner in which extremes meet. In the earliest specimens of vaulting, all the strength lies in the vaulting surface itself. As time went on, ribs were introduced, one after another, to strengthen and support it, till at length they amounted to a permanent framework of stone, centreing on which the vaulting surface lay.

Now, at length, time has its revenge, and the extreme multiplication of ribs led to the loss of their uses; the whole, or nearly the whole, being cut out of the same blocks with the panels; and thus the original system was reverted to; the vaulting surface becoming again the entire structure, and the ribs and panels simply cut as ornaments out of its substance.

The most remarkable production of the fan system of vaulting is the gorgeous central roof of Henry VII.'s Chapel, a work in which ingenuity, perplexity, and beauty are united in the most wonderful manner which can be conceived.

Though it stands quite alone in point of intricacy and magnificence, it is not the first instance of the use of the peculiar system on which it is founded. How Fuller could have attributed its origin to the foreign studies of the King and Bishop Fox it is difficult to conceive; for, not only is fan groining itself a purely English invention, but the special system of *this* roof has, so far as I know, only English prototypes.

The earliest of these is the vaulting of the Divinity School, at Oxford, finished about 1480. This was subsequently imitated, though with the loss of its leading principle, in the choir of the cathedral (then the church of St. Fridewid's Convent in the same city), a work which, though popularly attributed to Wolsey, is probably of earlier date.

I have often looked in vain for the leading principle on which this wonderful work was designed. Its *construction* is plain enough; the difficulty is the ideal of its *design*. Like everything, however, which is founded on reason, its idea once perceived, it becomes perfectly simple, and one only wonders where the difficulty lay.

It was simply as follows:—First imagine, for argument's sake, that the architect had intended to divide his space into three spans—a wide and two narrow ones—like the Lady Chapel at Salisbury or the crypt of the Sainte Chapelle at Paris, supporting the vaulting on ranges of thin pillars. The setting out of the divisions was about the following. The whole span being divided into five parts, two were given to the width of a bay, one to the imaginary aisle, and three to the central span. The vaulting of the aisles, then, would be in oblongs of double their width *set lengthway* of the building, and the central span in oblongs half as long again as their width *set crossway* to the building.

Let us apply to each the rule I have already laid down for the fan vaulting of oblongs. Beginning with the ideal aisles, from the pillars and responds and centres draw the *lower circles* of the fans reaching the apex of the *narrower* arches, and the upper circles reaching the apex of the *wider* arch. This gives us an oblong fan vault in its most normal form.

Then do precisely the same with the wider or central span, and our space is covered with oblong fan vaulting of the most usual kind. Now, as the lower arch of the central span is identical with the higher arch of the side spans, it follows that the fans in the sides (or aisles) are continued and completed in the central vault, the lower arch of the small vault being also continued round to complete the design. The decoration of the smaller fans then is in *two* stages, and that of the larger ones in *three*; but, the design of both being continuous, the one is only an extension of the other.

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Had the architect stopped here, no system of vaulting, on the fan principle, or space so divided, could be more systematic or more simple in its ideal.

He had no thought, however, of stopping at so common-place a stage, and his pillars were designed only to do their work on paper and then to be erased. The columns were omitted, and their places supplied by pendants; but, as such a roof could not stand for a moment, something must be done to supply the support which the pillars would have afforded.

This was effected by the introduction of strong transverse arches crossing the whole chapel, and springing much lower than the vaulting. These crossed the narrower spans, striking arbitrarily into their fans, and uniting themselves with the central vaulting.

In the Divinity schools these great arches show themselves throughout, as the supports of the otherwise helpless vault; but in Henry VII.'s chapel they are visible only in the side vaults, which are strutted up from them with strong tracery; but their upper portions penetrate the central vault, and become concealed from view.

The same system is carried into the apse, and that with the most surprising skill. The apse is supposed to be a portion of an entire octagon, with an aisle supported by eight small columns, of which two are lost by its conjunction with the straight part of the chapel. These columns being converted into pendants, the structural arches supply, as before described, the support demanded; but in this case they converge to the central part of the octagon.

The treatment of this point in detail cannot intelligibly be described in words. It is, perhaps, the most consummately skilled piece of designing to be found in the whole range of Med æval vaulting.

I have now completed my running, and all too rapid, sketch of the arched and vaulted systems of Mediæval architecture, though purposely leaving to another occasion the subject of domes. The limits of three lectures have only sufficed to give a somewhat cursory glance at its salient points, leaving the treasures of its detail to be searched out by the zealous student.

No subject in the whole history of architecture is so remarkable, or would more richly repay the investigator. I commend it to your individual study, and will only add that our own country is more rich in the variety of its vaulting than any other, and that London is especially well supplied with objects of study, containing, as it does, excellent examples of nearly every variety of vaulting, from the stern severity of the work of King Edward the Confessor in the substructures of his monastic buildings at Westminster, to that gorgeous and astonishing work which I have just been describing, and of which we may boldly assert (whatever may be our individual preferences), that *the world does not contain its equal.*

BELFAST TOWN-HALL AND MUNICIPAL BUILDINGS.

THE works for the new municipal buildings in Belfast, Ireland, are being energetically carried forward; the courts will probably be finished in May, and the whole completed in little more than a year from the present time.

The plan comprises, besides council-chamber and corporation offices, a recorder's court, custody and summons courts for magistrates, and the necessary offices in connexion with them; prisoners' cells and charge-office; police-barrack for sixty-four men, with stables, district stores, &c.; fire-brigade station for six engines, with superintendent's house and stables.

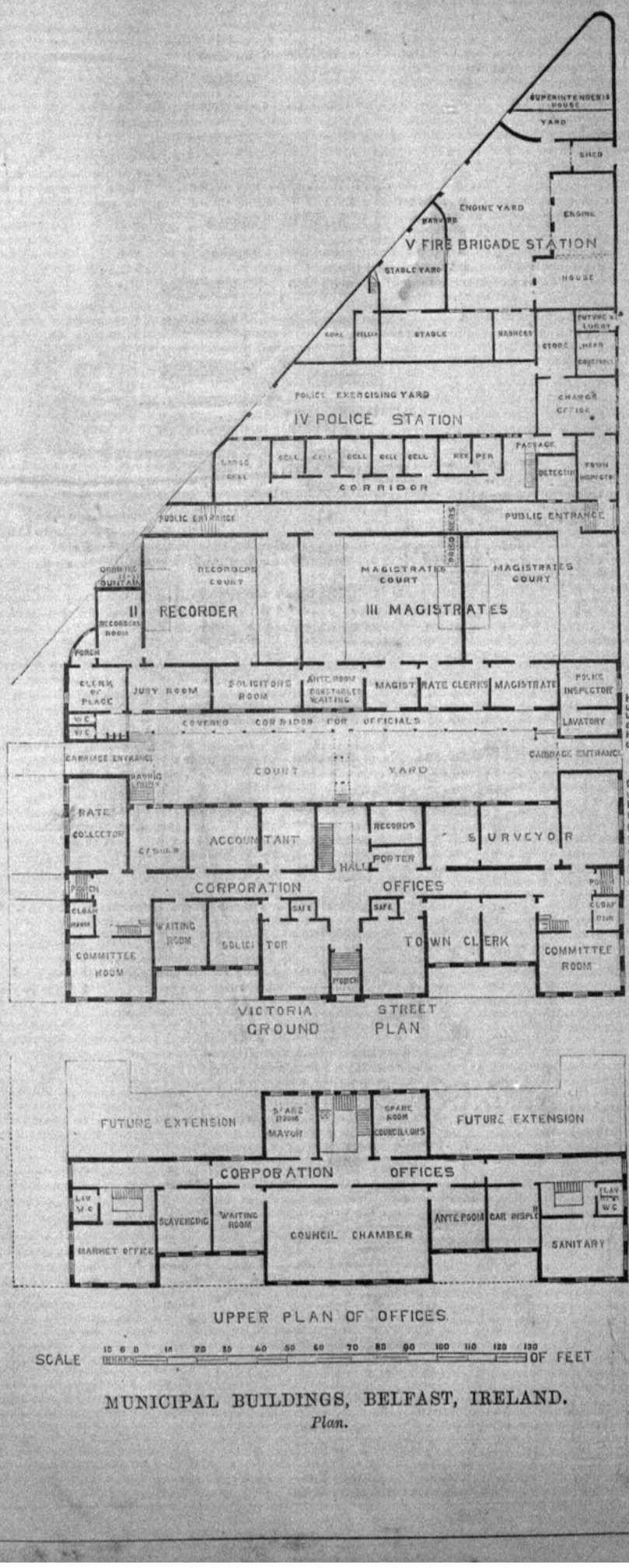
The material is perforated brick, from Ravenhill; and the freestone dressings are of red stone, from Dumfries.

The site is adjacent to the proposed Central Railway Station, and at the junction of Victoria-street and Chichester-street, from which point the view is taken.

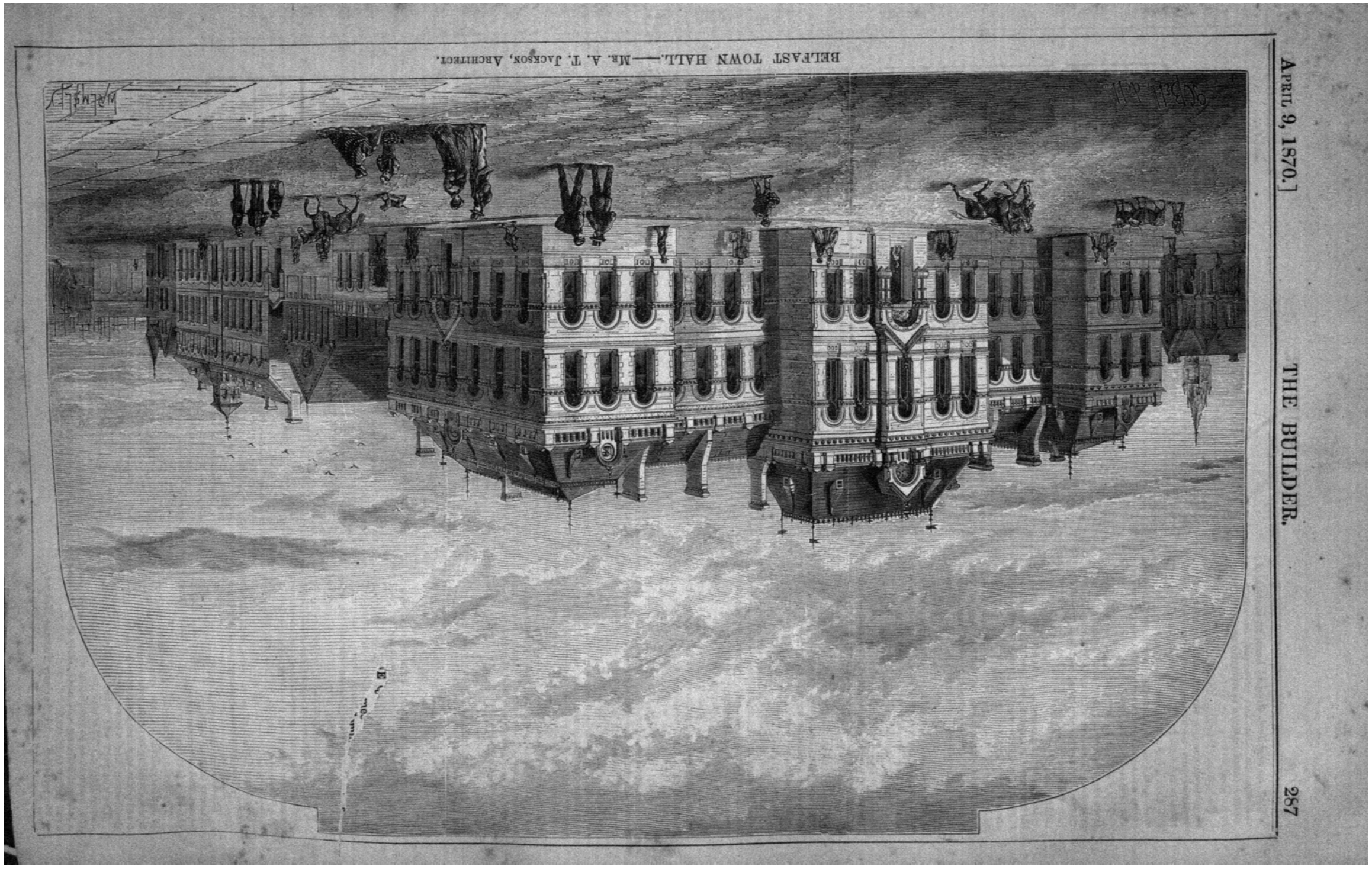
The design is that selected in the competition of January, 1869, but our view shows the additional building required subsequently to the contract plans to form the central police-barrack of the district, and a tower for the fire alarm-bell.

The contract was taken at 16,000*l.*, by Mr. James Henry. This was the sum stipulated in the instructions to competing architects, but the additional building will most likely increase the total outlay to 20,000*l.*

The architect is Mr. Anthony Thomas Jackson, of Belfast.

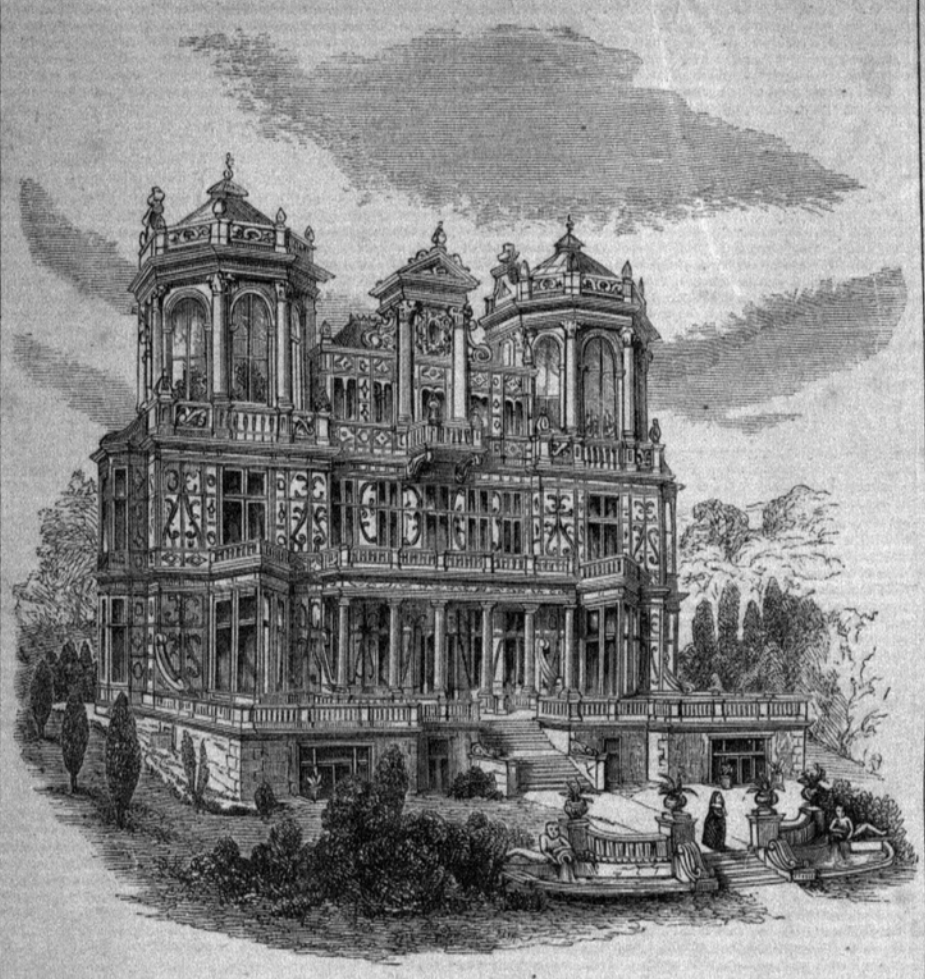


MUNICIPAL BUILDINGS, BELFAST, IRELAND.
Plan.

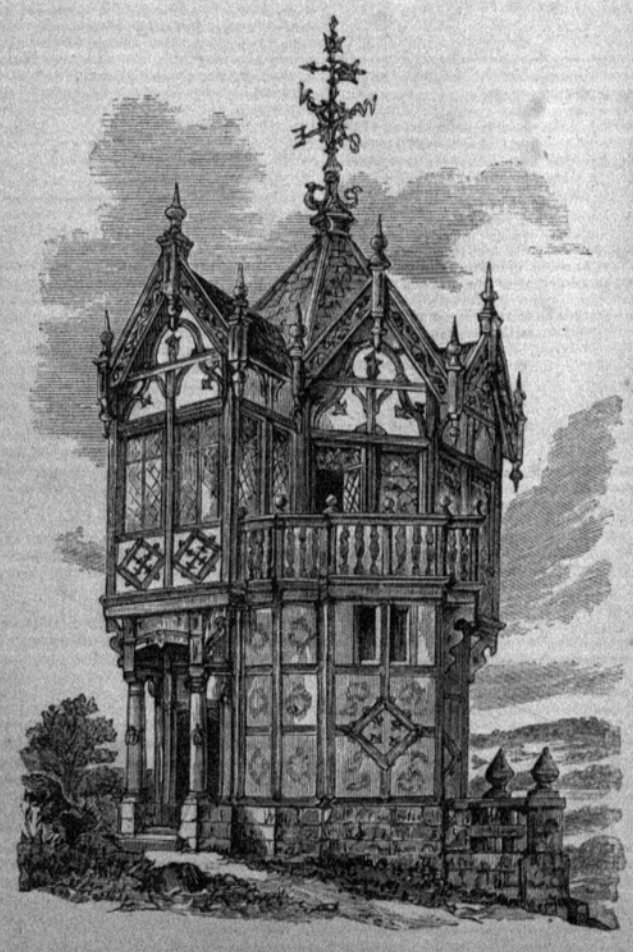


BELFAST TOWN HALL.—Mr. A. T. Jackson, Architect.

PICTURESQUE ARCHITECTURE.



Design for a Villa in the Old English Wooden Style.



Design for a Bath House and Summer Room. [See p. 277, *ante*.

RAILWAY MATTERS.

A DEPUTATION of tradesmen and other inhabitants of White Horse-street, Ratcliffe, have waited on Mr. Paget to complain of the Great Eastern Railway Company, which had completely blocked up the northern end of the street, a few feet from the Commercial-road. This had continued for upwards of five weeks, to the serious detriment of trade. The street was the great outlet for vans, wagons, carts, and other vehicles from the numerous coal-wharfs and other water-side premises to the northern parts of the metropolis, and all that traffic was stopped. A tradesman said a bridge, which continued the Blackwall line of railway over the street had exhibited symptoms of decay, and the buttresses had given way. What he and his brother tradesmen complained of was, the delay in pushing the works forward. Mr. Paget said he could not interfere until the case was regularly brought before him by the board of works of the district.

The bridge over the Dee, forming part of the viaduct which supports the Chester and Holyhead line of rails, is about to be entirely reconstructed by the London and North-Western Railway Company; the old wooden fabric being replaced by a substantial one of iron. A footpath along one side of the bridge open to the public has been suggested, but the company so far reply that the suggestion comes late, as their plans are completed; but the effort to convince them is not to be given up yet.

Mr. John Swan, of Edinburgh, and Mr. Macpherson, goods manager of the North British railway, have submitted to Mr. Tennent (secretary of the Cattle Transit Committee appointed by the Board of Trade) plans of permanent watering-troughs to be placed at special railway sidings where unlimited supplies of water can be secured. These sidings, which may be specially arranged for out-of-the-way places, will cost comparatively little money, while the alteration required in the trucks, by which a top bar will be temporarily dropped to allow the animals to put their heads into the raised troughs, is of the most trifling character. As animals, unlike human beings, will only drink when they are thirsty, these trough-sidings might be conveniently placed about 200 miles apart.

THE RELATION OF THE STATE TO SCIENCE.

LAST week a conference was held at the rooms of the Society of Arts, to discuss the question of the "Relation of the State to Science, and the Necessity for Official Inquiry into the Subject by Royal Commission." Lord Henry Lennox, M.P., presided, and the following resolution was adopted:—

"That the conference at the Society of Arts desires emphatically to affirm the conclusion of the British Association for the Advancement of Science, that a royal commission to inquire into the relations of the State to science is very desirable, and to recommend that the scope of the inquiry be made as wide as possible."

THE ENCLOSURE OF BRISTOL EXCHANGE QUADRANGLE.

AT a recent special meeting of the town council, the Corn Exchange Committee presented a report and recommended the carrying out of a plan prepared by Mr. E. M. Barry, architect, for covering the quadrangle of the exchange, at a cost of about 4,000*l*. By this plan, according to Mr. Barry's report,—

"The central area is enlarged to 55 ft. by 55 ft., from 50 ft. by 50 ft., as at present, which would add greatly to its convenience and architectural effect. To obtain this advantage, and to avoid the danger of darkening the ground-floor corridors, the latter are somewhat reduced in width by setting back the columns, though still of convenient and handsome dimensions. Galleries are placed on the upper floor, and the whole internal area, including the galleries, is covered with a roof, giving a total height of 57 ft. to the lantern. In order to avoid the objections to a roof of iron and glass over galleries filled with people, this mode of construction is confined to the central area, and the roofs over the galleries are of an architectural character, with a double-glazed skylight in the middle of each bay. In consequence of the doubt before explained of the adequacy of the present columns to support such a construction, they are raised to the upper floor, and their place taken on the ground-floor by new columns, with an appropriate entablature of the Doric order. This order, being of a stronger character than the Corinthian, is better calculated to support the weight of the galleries, and is architecturally suitable for the lower of two orders. The galleries might be level, or fitted with raised seats; in the latter case, they would provide sitting accommoda-

tion for about 800 persons; and the hall, constructed according to this design, would be suitable for many public purposes, such as meetings, concerts, &c."

The Mayor moved, and Alderman Ford seconded, the adoption of the report. Alderman Green moved as an amendment,—

"That to cover the interior of the exchange, and alter it in the way proposed, may impair, perhaps destroy, the beauty of one of the finest public buildings, erected at a large cost by the merchants and traders of Bristol, from the designs of an architect of great skill and taste."

Alderman Robinson seconded the amendment, but after considerable discussion the recommendation of the committee was adopted without a division.

TURNMILL STREET: ARCHES UNDER PUBLIC WAYS.

SIR,—Additional arches, invert arches, front enclosure, and transverse walls are being carried up to the existing arches under the public way in Turnmill-street, by Messrs. Peto & Betts, who repudiate any liabilities under section 9 and 25 of the Metropolitan Building Act, 1855, although called upon by the district surveyor of Clerkenwell to return the proper and necessary notices in respect of such works, and, in defence, refer to the solicitors of the Metropolitan Railway.

What they are doing is in anticipation of further subsidence. The roadway has gone down 2 ft. The Metropolitan Board might perhaps take steps. There is evident on the part of Railway Companies a determination to resist all Common Law. A SURVEYOR.

"FEVER DENS."

SIR,—We have heard lately a great deal about "Fever dens," but it appears to me that the proper method is not taken to ventilate them.

I have had notice (where fever has been in the houses), to have all the sashes made to open at top. The same are not hung at present, and many are not in small and old houses at this present time. This is all very well if you could only persuade the tenants to keep them open, but the poor generally are so averse to fresh air that they frequently paste and paper up the sashes in cold weather.

I would urge that an iron air-brick or ventilator be let into the chimney breast, close to the ceiling, the cutting made upwards at a very sharp angle into the flue: this would carry off the foul air, which is very bad in many cases where eating and sleeping are carried on in the same rooms.

The ventilator should always be kept open. If there were one in every poor person's living and sleeping room, I think we should not have so many cases of fever: they are bred by the foul air breathed over and over again. Care should be taken that the tenants do not paper up the ventilator. J. D.

*** How many hundreds of times has this been said? And yet it is necessary again to say it.

THE LATE HULL THEATRE.

IN the Westminster County Court, last week, before Mr. F. Bailey, Judge, the case of Jennings v. Chatterton was heard. The plaintiff is a plasterer, carrying on business at 40, Charlotte-street, Great Portland-street, and sued Frederick Balsir Chatterton, the present lessee of Drury-lane Theatre, to recover the sum of 27*l.* 8s. 5d., for alleged extras in finishing the late Hull Theatre.

Mr. Lexton appeared for the plaintiff; Mr. Cotnam for defendant.

From the evidence of the plaintiff, it appeared that plaintiff had contracted to do the plaster-work at the the theatre for 150*l.*; but upon going down to Hull he found that the building was not the same as had been represented on the plan furnished to him. The items he enumerated as extras were,—having to seek for scaffolding, 17s. 10d.; raising the architrave and frieze of columns 6 in. and the second floor 2 ft. 2 in. higher than was shown on the plan he agreed to; altering the reveal and top of main entrance-door, placing a key-stone and altering two windows, instead of doors (as in the plan); making niches of two places shown as windows; adding a portico and four Doric columns to the original plan, and carrying down six Doric pilasters lower than on plan. He mentioned these extras to Mr. Smith, who said, "Very well, get them done, and I will see you righted." He cleared the rubbish away at Mr. Chatterton's desire, and repaired a column which had been injured during an election meeting, which he also charged extra. The extras altogether amounted to 33*l.* 7s., but 5*l.* 18s. 7d. had been admitted.

In cross-examination, plaintiff said that about 30 ft. of cornice work shown in his plan he did not do, in consequence of the portico, but he did other work to compensate.

The defence was, that the contract was taken for 150*l.*, and the only extras which could be admitted were 4*l.* for the Doric columns and 1*l.* 18s. 8d. which remained after payment of 159*l.* 7s.; that although every little thing had been magnified into an extra, not the slightest abatement had been made; and that the work was, in fact, carried out on the give-and-take principle.

Mr. Jephry Robinson, of Hull, who built the theatre, compared plaintiff's plan with the one from which the theatre was erected, and said that they both agreed, and that the theatre was not 2 ft. 2 in. higher than was represented on plaintiff's plan. The bills were paid, and he heard nothing of all these extras until about a year after the job was finished, about the time the theatre was burnt down. Mr. Smith was architect, and was to decide upon any extras and give orders. When the contract was taken, witness pointed out that the two side-doors were turned into niches. Plaintiff had no business to put a key-stone. 5*l.* 18s. 8d. had been paid into court.

Frederick George Smith said he was borough surveyor at Hull, and was architect of this theatre. The plan, so far as heights were concerned, corresponded with the building. In November, 1868, he received an account of 12*l.* 3s. 6d. for extras, from which he knocked off 17s. 10d., and certified for the balance, 11*l.* 5s. 8d., which was paid as a settlement of the account. That was the only account for extras which he had seen until the morning of the trial.

His Honour said the verdict must be for defendant. It seemed clear that Mr. Smith was to decide what plaintiff was entitled to for extras, and plaintiff seemed to have acted upon this, and sent in his claim accordingly, which was settled.

Judgment for defendant, and costs allowed.

LATCH-KEYS WITH SAFETY.

SIR,—The public have been recently cautioned against thieves with skeleton latch-keys, who lately, on a Sunday evening, visited some houses in Bloomsbury. I have devised a plan by which I think such keys might be rendered useless, while the inhabitants would still be able to let themselves into their houses. My suggestion is, that the chain, with which most doors are provided, should be more frequently used to supplement the latch than it is at present, and that two of the links near the end attached to the wall, or door-post, should be separated, and be connected again by means of a good padlock of which the inhabitants of the house might carry a key; or, better still, that one of those padlocks should be used which are opened by being turned round so as to spell a particular word, to unlock which, therefore, no metal key would be of any use. A. T. P.

DANGERS OF KITCHEN BOILERS.

SIR,—I have just read a letter under the above head in your paper. If my experience is worth anything you are welcome to it. My kitchen boiler is supplied by a cold-water cistern in the roof of my house in the country, say about 28 ft. above the boiler, whence a pipe rises to an iron hot-water cistern about 2 ft. below the level of the cold-water cistern. An escape-pipe issues from the hot-water cistern through the roof: this got stopped up by a deposit of lime, the effect of which was that one of the lead pipes burst, and wetted the ceiling of the room below to some extent. There seems to me considerable safety in the lead pipe giving way easily before the pressure had accumulated sufficiently to damage the boiler or cause an explosion. In frosts, I am obliged to prevent the water going down into the boiler by a stop-cock, as soon as I find the water is frozen in the pipes, which, however, may often be prevented by hay-bands round the pipes. F. J. M.

THE PROJECTED CHANNEL RAILWAY.

SIR,—In the concluding sentences of your article of last issue upon our scheme for crossing the English Channel by a railway, you observe that "it is, however, unnecessary to enter into the details of a discussion, because there is one simple consideration, which to any prudent man is wholly conclusive on the subject:" you say, "let us admit Mr. Bateman could complete his tube, &c. . . . and that the miners come out into open air on French territory. Still there remains the undeniable fact that the whole of this enormous toil lies, at every moment, and will be, at every moment, at the mercy of a few barrels of gunpowder."

It so happens that there is some experience of torpedoes constructed by Governments on the largest scale and of the most powerful explosives.

It is, perhaps, not generally known that the largest mine ever used by Governments for the protection of harbours, &c., is wholly ineffective in deep water. Deep water is our difficulty in the construction of the Channel railway,—in turn, deep water is its safeguard; for it cannot be approached, and is practically beyond the reach of destructive agents.

The most destructive torpedoes may have injurious effects upon the thin shell of a vessel in a depth of water not exceeding 30 ft., provided the mine should explode within a few yards of the hull of the ship. The charge of such a torpedo, confined in a strong iron casing, must be over one ton of rifle powder. At three times that depth, or about 90 ft. of water, the charge must be twenty-seven times that at 30 ft. to produce similar effects; at 120 ft., it would be sixty-four times that at 30 ft.; and so on. This law was determined by experiment in various countries, and in England notably by Field-Marshal Sir John Burgoyne.

But even such enormous charges, involving the use of scores of tons of the strongest powder, would have a very limited range at the bottom of the Channel. Unless such a charge were placed in close proximity to the tube, at a distance not exceeding a few fathoms, no effect would be produced, for the object to be destroyed must come within the cone of action of the torpedo. The proper ignition of such large masses of explosives is also a most difficult matter. If mismanaged, not one-tenth of the charge will be fired, and the rest will be blown away unconsumed.

It is easy to see why the above law of resistance holds good. In order to displace one cubic yard of water near the mine, precisely the same volume of water must be displaced on the surface within the radius of action. The whole mass of water above the mine, represented by an inverted cone, must be set in motion. The volume of water to be lifted by the mine increases as the third power of the height of the cone or depth of water; consequently, at double, treble, &c., the depth, the weight of water to be set in motion would increase eight, twenty-seven, sixty-four, &c., fold, and the power required, represented by the charge, would be correspondingly eight, twenty-seven, sixty-four, &c., times that at 30 ft. to produce similar effects.

Your "few barrels of gunpowder" would evidently be very ineffective and harmless; but, assuming the proper quantity to possess any element of mischief, may we not ask how you would propose to sink such immense charges from the surface of the Channel to within a few fathoms of the iron tube? Could any mischievous person tell its precise position in the open Channel within 100 yards; or, if he could, could he tell how many yards a gentle current would carry his "barrels" right or left of the tube whilst they were sinking 30 or 40 yards through water? Do not you think that to lodge such a mine would require the ingenuity of the Royal Engineers, plenty of time, and no one to interfere with their grand operations?

It is only in shallow water, within half a mile or so of each shore, within the breakwaters and under easy range of guns, that such an attempt might have a chance of success. And, even assuming for the sake of argument, that a hostile power had, by greater ingenuity than is at present at our command, somehow succeeded in the destruction of the railway, do not you think that England and France—the assumed joint proprietors of that railway—are powerful enough to make the aggressors, or any combination of them, pay for the damage they had done?

J. F. BATEMAN.
J. J. RÉVY.

AN ARCHITECT'S ACCOUNT WANTING DETAILS.

A SOMEWHAT important case, it being the first of the kind heard under the New Bankruptcy Act, has been decided by the registrar of the Southampton County Court. It seemed that Messrs. Parmenter & Guillaume, of Southampton, architects, were employed by Mr. John Gater, of West End, to superintend the erection of some buildings for him, Mr. Toogood being the builder. On the account, amounting to 57*l.* 14s., being rendered, Mr. Gater disputed it, one of the grounds being that the last builder's certificate should not have been given, and ultimately Messrs. Guillaume & Parmenter issued a trader's debtor summons under the Bankruptcy Act, 1869.

Mr. F. Leigh appeared to show cause against the rule, contending that the proceedings were taken to annoy, and the particulars furnished were insufficient, and that there was consequently no foundation for the court's jurisdiction. The particulars delivered should be of such a character as to show the debtor what the claim was for, and whether it was a *bonâ fide* claim above 50*l.*

Mr. Killby, who supported the summons, said Mr. Gater knew perfectly well to what the account referred, he having had full detailed particulars.

The Registrar considered he had nothing to do with any particulars which had been furnished before, but only those annexed to the summons. He should take no evidence. Under the Act Messrs. Parmenter & Guillaume were bound in the particulars to give reasonable and convenient certainty as to dates and all other matters. On reading the particulars he saw they set forth services rendered, materials found, commission, and account "stated;" while the affidavit of the debtor said he did not owe the sum of money upon which it was sought to make him a bankrupt; in fact, he said he did not owe Messrs. Parmenter & Guillaume 50*l.* There was no date of the "account stated," no amount named for the services or materials, but they were all looped together in one sum, and he did not, therefore, consider the particulars of demand were of "expressly reasonable and convenient certainty as to dates," and therefore he should rule that they were insufficient. Reading the clause of the Act of Parliament, which provided that the property of a debtor might be equally divided amongst his creditors, and looking at the affidavit filed by the plaintiffs, and at that filed by the defendant, he did not think these proceedings were taken for the purpose intended by the Act, the debt being so completely in dispute. Even supposing the particulars annexed had been sufficient, he certainly should not have made an order. The summons must be dismissed, with costs.

CHURCH-BUILDING NEWS.

Bridekirk.—The new parish church at Bridekirk has been consecrated by the Bishop of Carlisle. The plans were prepared by Messrs. Cory & Ferguson, of Carlisle. The site is one closely adjoining the old church. The principal details of the old structure have been preserved. The old chancel arch has been re-used in the organ-chamber. The present south doorway was the original south entrance of the church. The north doorway has been rebuilt in the present south transept; and the old vestry door now gives access to the belfry stairs. The general features of the edifice partake of Norman character. The plan is cruciform, with a chancel, north and south transepts, and a nave. The square tower rising from the junction of the four parts is groined below, and has a large bell-loft filled by a peal of six bells. The upper part of the tower has eight windows—two on each side, and is terminated by a flat parapet. The church and tower are built of yellow freestone from quarries at Tallentire and Aspatria; and the interior of the building is lined with brick supplied by Mr. Lucock, of Broughton Moor. The original plan of the architects was to show the tower roof, to add to the length of the nave, and to construct the inside walls and arches of dressed stone. But they had to substitute brick for the internal lining, and to trust for effect more to the massiveness of the parts than to the elaboration of details. The chancel, like the tower, has been groined with brick, having stone ribs. The roofs of the nave and transepts are semicircular, and lined with oak boarding. There are stained memorial windows at the eastern and western ends, and in the south transept of

the church. The seats in the nave and transepts are open, and made of pitch pine. The seats in the chancel, built at the expense of the lay rectors, are of oak. The reredos is of red terra cotta, executed by Messrs. Blashfield, of Stamford, from a design of Messrs. Cory & Ferguson. The communion railing was carved by Mr. Pickering, of Carlisle, by whom also the foliage and decorations of the capitals and the corbels supporting the groinings were wrought. The organ, which was built by Messrs. Holt, of Edinburgh, and cost 200 guineas, is placed near the pulpit in the north transept. The church is warmed by hot-water pipes of peculiar construction, whereby the surface of the pipes forms the floor, and much less heat is lost than when the pipes are laid in a trench with a grating above. The masonry of the church is the work of Mr. Henry Graves, of Aspatria, builder; the joiners' work has been done by Mr. Henry Dent, of Cockermouth; the plumbing, by Messrs. Thomson & Sons, of Carlisle; the painting, by Messrs. Slee & Morgan, of Carlisle; and the heating apparatus was supplied by Mr. Clarke, of the same place. The cost of the church, which is capable of seating 300 persons, has been about 4500*l*.

Webheath.—A new church, dedicated to St. Philip, at Webheath, in the parish of Sardebigge, Worcestershire, has been consecrated. The edifice, which has been erected through the liberality of the late Baroness Windsor, is from the designs of Mr. Preedy, of London, architect, and is in the Early Decorated style of Gothic. The ground plan comprises a nave 60 ft. long by 22 ft. wide; chancel, 28 ft. long by 18 ft. wide; a vestry on the north side, and porch on the south-west. The accommodation is for 200 adults and children. There is a stone bell gablet over the chancel arch. A suitable dwarf wall and an iron railing with entrance-gates encloses the site on three sides. The materials used are the local stone from the Hewell quarries, with Bath stone-dressings, bands of Red Finstal stone being introduced on the exterior, as also on the interior facing, which is of stone throughout. The roofs, which are open-timbered, are of red deal and pitch pine, boarded and covered with Staffordshire tiles. The font is of Painswick stone, with polished shafts of Irish green marble, and has an open oak cover. The pulpit and stairs on the north side of the nave are of English oak, with carved panels. The prayer-desk, chancel seats, altar table and rails, are of the same material, and the benches in the nave of stained deal. The windows are glazed with plain cathedral glass, of two tints of green, with the exception of the east window, which is filled with stained glass designed and executed by the architect, and contains the following subjects:—The centre light the Crucifixion, having on either side types of the same, namely, setting up of the Brazen Serpent, and Abraham offering up Isaac. In the tracery over the centre light is Our Lord in Session in His Mediatorial Office, with angels in the side tracery. The passage spaces in the nave and chancel, and the porch floor, are laid with Godwin's tiles. The church is heated on the hot-water system by Mr. Skinner, of Bristol. The carving is the work of Mr. Boulton, of Cheltenham. Messrs. McCann & Everal were the contractors; and Mr. Smith, the clerk of works. A reredos, constructed for the most part of Carthaginian porphyrites brought from Rome by the late Lord Plymouth, is in course of execution by Messrs. Burke, of London. The design consists of the material arranged in bands and patterns. There is a central cross in white marble flanked on either side by panels containing angels bearing musical instruments, executed in glass mosaics on gold backgrounds. In the side compartments are the Alpha and Omega, and the sacred monograms, incised in coloured cements on white alabaster.

Colbury (*New Forest*).—A new church at Colbury has been consecrated. Mr. and Miss Ibbotson called in Mr. Ferrey as architect. The edifice has cost between 2,000*l*. and 3,000*l*. It is in the Decorated style of architecture, and consists of a nave and chancel, with a vestry and north porch. Over the western entrance is a bell turret, about 60 ft. high, the frame being of oak, with ornamental cuspings in the upper part, and the covering cleft oak shingle. The walls are of brick and field flints, the quoins and dressings, both within and without, being of Corsham stone. The nave has an open-timbered roof, filled in at the back of the rafters with V-jointed boarding. The roof of the chancel is polygonal, with moulded ribs. The outer covering is of local red tile, with banded courses. The internal walls up to the window cills are lined with Maw's tiles, supplied by Messrs. Simpson & Sons, of London. The encaustic tile pavement of the sanctuary is also of Maw's manufacture, and so is the reredos, though here mosaic has been introduced for the various sacred symbols and emblems. The pulpit, at the south of the chancel arch, is of stone, having panels filled in with mosaics. Near the northern porch is a stone font, the upper portion, bearing the typical flowers of the style in which the church is built, being supported by a series of arches, the pillars of which are of coloured stone. The east window has been filled with stained glass as a memorial of the late Mrs. Ibbotson. The three principal lights contain the Resurrection, the raising of Lazarus, and the raising of Jairus's daughter, the geometrical portions of the head of the window being filled with a suitable design. Accommodation is provided for about 200 persons, the seating being stained deal benches, and nearly the whole cost has been met by Mr. and Miss Ibbotson. The builders were Messrs. Goddard & Son, of Farnham, who have also nearly completed the parsonage-house. Mr. Charles Stapleton was clerk of the works. The grounds have been laid out by Messrs. Horsman & Sons, nurseryman, Longdown.

Barcheston.—The ancient church here having fallen into decay, has just been restored from the designs of Mr. Ewan Christian, of London. In removing the old plaster, at the east end of the north aisle, was discovered on old Norman door, blocked up; this has been retained. The church was closed on Quinquagesima Sunday, 1869, and the work begun by Mr. A. Groves, of Milton, near Chipping-Norton, whose contract was accepted.

Ronaldkirk.—The church restoration being nearly completed, service has been resumed in the edifice. The works have been carried out, from the plans of Mr. Haswell, architect, North Shields. By means of outside drainage, the damp which formerly affected the walls has been dispelled; and the removal of the gallery has made the church lighter, as well as done away with a structure that deformed the interior of the building. The large west window, formerly obscured by the gallery, is now revealed in its integrity. The high-backed pews remain.

Montacute.—The ancient little church at Montacute, near Yeovil, which has for a long time past been badly out of repair, is to be thoroughly restored and renovated. It is the parish church, and is dedicated to St. Katherine. The recent examination has discovered in it relics of Norman architecture. The plan for the work of restoration was prepared by Mr. Hall, architect, London, who directed the pulling down and rebuilding (in the local "Ham stone") of the nave and transepts, the substitution of new open benches for the antiquated high pews, &c. The tower will remain as it is, but the rebuilding of the other portions of the edifice is absolutely necessary. The plan also provides for the reparation and bringing in view of an old window at the western end of the church, which has hitherto been partially blocked up and obscured by the ringing-loft. The transepts belong to the Phelips family, of Montacute House, who will accordingly bear the expense of the restoration to that extent. Tenders for carrying out the work were invited, and the contract has been entered into. The contractor is Mr. James Pudden, of West Coker, the amount of whose tender was 947*l*. There were eight other tenders, the highest of which was 700*l*. above the one accepted. The greater part of the money required has been subscribed.

Runhall (*Norfolk*). — The church of this parish has been re-opened after having undergone a repair and partial restoration. It has of late years presented an appearance of desolation;—its chancel destroyed and gone; its window tracery patched with wood and red brick; its modern porch unsightly and dilapidated; its walls thrust out of the perpendicular; its east gable cracked by the pressure of an ill-constructed roof, erected some seventy years ago, which has of late been liable at any time to fall in from decay; and its tower, with its floors gone, and its sounding windows in ruin. The repair and partial restoration which have been effected are due to the very liberal response which has been made in the neighbourhood to the appeal of the vicar, the Rev. B. B. Slipper. The Rev. J. Barham Johnson, rector of Welborne, has given attention and trouble to the work while in progress. The architect has expended the very limited funds which were available for the restoration in an economical manner. The form of the original roof could be gathered from a curved brace and the impression of a putline, and it would have been most desirable to restore it, thus repeating the local type of broad-naved churches found at Elsing, North Tuddenham, and elsewhere; but to do so would have involved pulling down and reconstructing the north wall, with its doorway and windows: therefore the buttresses have been rebuilt in cement, the walls have been repaired, and the simplest possible roof, supported by posts from the ground, and stiffened by longitudinal and transverse curved braces, has been made to relieve the side walls from pressure, and to give to the square-looking room of late years the appearance of a church, with nave and side aisles, a treatment which is found in the ancient church of Winterton, in this county. The restoration of the chancel being found impracticable, a raised dais, paved with tiles, for the holy table, with singers' seats on either side, has been placed at the east end. The remaining space has been provided with open benches of deal, and the tower has been made available for a vestry. The porch, the stone and glass of the windows, and the tower sounding windows, have been patched up as much as the funds would admit of. The contract was carried out by Mr. Hubbard, of East Dereham. The architect was Mr. Edward J. Tarver, of London. During the progress of the work, crocketed fragments of the ogee-headed niche in the east wall and other remains were discovered.

SCHOOL-BUILDING NEWS.

Tamworth.—A new day-school, which will accommodate more than 300 children, has just been erected by the Roman Catholics of this town. Mr. C. Clarson was the builder, the cost being 400*l*.

Southampton.—New Roman Catholic Schools have been opened in Bugle-street. Mr. R. Critchlow was the architect. The cost is about 750*l*. There are two rooms, the one on the ground-floor, 35 ft. by 20 ft., and the other upstairs, 40 ft. by 20 ft.: each is 15 ft. in height, with a class-room in the rear, 18 ft. by 12 ft. The upper room is lighted by five, and the lower by four two-light windows, which extend to within 12 in. of the ceiling, the better to assist in the ventilation, which is aided by a series of Boyle's ventilators (recommended for excluding downward draught), fixed in the outer walls. The style is after the domestic architecture of the sixteenth century, adapted to harmonise with several of the old buildings for which St. Michael's-square is noted. The front is entirely of brick, the roof line being broken by three gablets with ornamental verge boards. Mr. Laver is the builder.

Lincoln.—Four memorial stones of the new Sunday schools in Clasket-gate have been laid. These schools, when completed, will be the largest in the city. The main building comprises two rooms, 70 ft. by 34 ft., affording accommodation for upwards of 850 children, reckoning 6 superficial feet per child. Attached are four class-rooms or retiring-rooms, raising the accommodation to nearly 1,000 children. By glass sliding doors it is proposed to separate part of both rooms off to form retiring-rooms for classes on the Sunday; when the rooms are used for public meetings the doors will be thrown back, and the whole space will form one room. The estimated expense, including lighting and fitting, &c., is upwards of 1,200*l*. The character of the building is to be plain and substantial, to correspond with the adjoining chapel.

St. Silas, Islington.—The new schools, which have been erected in Vittoria-place, Barnsbury-road, have been formally opened. They have been built in accordance with the regulations of the Council on Education, and receive the maximum Government grant of 417*l*., and a grant of 250*l*. from the National Society, independent of great assistance from the Bishop of London's Fund. The building, which is in three stories, is intended to accommodate a total number of 417 children; the lower story, comprising a room of 54 ft. by 18 ft., and a class-room, is appropriated to the infant school; the middle story, containing the same accommodation, to the boys; and the upper floor, consisting of a room 43 ft. by 18 ft., and a class-room, is devoted to the girls. There are separate entrances, and two playgrounds. Messrs. Dove, Brothers, were the builders; Mr.

Edwin Clare was the architect. The amount of the contract for the works, inclusive of walls to the playgrounds, was 1,843*l.*, and the actual expenditure was kept within this limit.

STAINED GLASS.

St. James's, Marylebone.—This church is in course of restoration, and the Rev. Sir Lionel Darell, bart., of Fretherne Court, Gloucestershire, has commissioned Mr. George Rogers to execute six stained windows, containing life-size figures of St. James, St. John the Divine, St. Peter, the Virgin Mary, Moses, and Elias. These windows are intended to be dedicated by Sir Lionel Darell to the memory of his late sister, Emily Mary, wife of the Rev. A. B. Lechmere, of Hanley Castle, and other branches of his family.

Ringwood Church.—Two windows, executed by Messrs. Ward & Hughes, of London, are being placed in the lancet lights of the chancel, to the memory of the late vicar, the Rev. R. Holmes Tuck. The subjects are full-sized figures of St. Peter and St. Paul, the patron saints of the church. In a small panel over the figure of St. Peter is a design illustrating the walking on the water, while the group in the corresponding window illustrates the conversion of St. Paul. The cost of these windows has been defrayed by local subscriptions.

St. Patrick's, Brighton.—This church, in Cambridge-road, has just received an addition in the shape of a stained-glass window, presented by members of the congregation to the incumbent, the Rev. J. O'Brien, D.D., and Mrs. O'Brien. The design is of two-fold character, the lower portions of the five principal lights representing Christ in his humiliation, and the upper portions, Christ in glory. The lower part presents a connected scene of the Nativity; Virgin and Child in the manger of Bethlehem, occupying the centre, with the star of Bethlehem above; on one side are the shepherds in attitudes of adoration, and on the other the Magi presenting their gifts. Above, the centre is occupied by a representation of Our Lord enthroned, surrounded by the aureole, and carrying the sphere surmounted by a cross. On the right hand of the throne appear St. Peter, carrying the keys, and St. John the Baptist, with "raiment of camel's hair;" on the left are St. Paul, bearing "the sword of the spirit," and St. Patrick with the type of evil, the serpent, beneath his feet. The tracery of the upper part is filled in with angels (two of them playing musical instruments), the emblem of the lamb and flag, and chromatic devices. The figures are life-size.

Emneth Church.—A stained-glass window, the work of Mr. Wailes, has just been placed in the western end of the tower of this church, in memory of the late Mr. Stimson, for many years a resident in the parish. The window is Perpendicular in style, 18 ft. high and 12 ft. wide. It is divided into four bays by the vertical shafts, and in each bay is depicted a group of figures illustrative of the early life of our Lord. 1. The Nativity, with the Shepherds adoring the Infant Saviour; 2. The Magi presenting their Offerings; 3. The Presentation of our Lord in the Temple; 4. Our Lord surrounded by the Jewish Doctors. Emneth Church has a triple lancet window at the east end, representing the closing scenes in the life of our Lord, also the work of Mr. Wailes.

Pershore Abbey Church.—This church has received a further adornment by the insertion of two large stained windows in the south aisle, as a memorial of the late Mr. Edwin Ball. They are the work of Messrs. John Hardman & Co., of Birmingham. The series of subjects chosen illustrate the chief events in the history of the abbey from its foundation. In the first window are—1. Egilwada bringeth the Saint to Pershore; 2. Abbot Foldbirth cometh to Life; 3. St. Eadburgh serveth her Fellows; 4. Ethelred and Elfleda, Benefactors; 5. Beornoth receiveth a Charter from Ceonulf; 6. The Benedictine Rule brought in; 7. St. Eadburgh chooseth the Religious Life; 8. King Edgar giveth Charter; 9. Earl Odda becometh a Monk; 10. King Ethelred giveth Pershore to Oswald; 11. The Danish Fury; 12. Alphere (Alderman), plundereth the Abbey; 13. The Saint worketh Miracles; 14. Sweyn is defeated. The upper part of the window is filled with figures of King Canute, King Edward I., King Henry III., Bishop Brithray, and Urso D'Abbitôt. The second window also contains fourteen subjects, namely,—1. Abbat Upton is drowned; 2. Abbat Eleruis preacheth Crusade to Llewellyn; 3. William de Beauchamp, Benefactor, dies; 4. King Charles breaketh down the Bridge; 5. Harley is made Knight in Jerusalem; 6. Fire breaketh out on St. Urban's Day; 7. King Edward visiteth Pershore; 8. Queen Elizabeth passeth by; 9. The Confessor giveth Lands to Westminster; 10. Abbat Guido is deprived for Simony; 11. Fire burneth Church and Charles; 12. Monastery is dissolved; 13. The Fair holden in the Churchyard; 14. The Church of Holy Cross restored. This subject contains full-length portraits of the Bishop of Worcester, the Dean of Westminster, the late Dr. Williamson, and Mr. Ball. The upper lights of the window contain figures of King Edward III., King Henry V., King Henry VI., and Queen Victoria, as also of Nicholas, bishop of Dunkeld, and Bishop de Politon.

St. Mark's, Woodhouse, Leeds.—The Rev. S. Kettlewell, vicar of Woodhouse, has recently erected a stained-glass window in St. Mark's Church, Woodhouse, to the memory of Ann Elizabeth, his wife. The style of the window is Perpendicular, and it comprises three lights and tracery, the former of which are occupied by the subject of the Sermon on the Mount, extending over the three openings, and inclosed within canopies and ornamentation of suitable design. The tracery and portions of the canopies contain the Beatitudes, with appropriate inscriptions. The glass was from the works of Messrs. R. B. Edmundson & Son, of Manchester.

Books Received.

The Rural Life of Shakspeare, as illustrated by his Works. By C. ROACH SMITH. London: J. Russell Smith, Soho-square. 1870.

THE vast amount of general and special knowledge reflected by Shakspeare's works includes evidence which might be presented, and indeed which has, to some extent, already been presented, to favour the supposition of his having studied for many professions or trades. "The Tempest" would tend to prove him a sailor; "Hamlet," and other plays, a lawyer and mad-doctor; and so forth; but, however that may be, Mr. Smith, we think, has clearly shown Shakspeare's intimate knowledge of gardening and rural life. The force of the numerous allusions to such subjects consists in their vivid and life-like character, as well as in their endless recurrence, and the obvious familiarity with rural modes of thinking, which manifests itself in wit and play upon words, and in conclusions not likely to present themselves to mere users of rural verbiage.

Thus, for example, to the unfamiliar beholder of a splendid display of bloom in early spring, the first and leading idea is naturally that it promises a fine crop; but that is far from being the notion of an experienced gardener, which Shakspeare often reflects in his writings, as in King Henry IV., part ii., act 1, scene 2,—

> —"As in early spring
> We see the appearing buds, which to prove fruit
> Hope gives not so much warrant as despair
> That frosts will bite them."

And this familiarity with gardening appears in his witty play upon words in use among horticulturists, such as Mr. Smith instances from "As You Like It," about grafting. In act 3, scene 2, *Touchstone* says, "Truly the tree yields bad fruit;" and *Rosalind* replies, "I'll graft it with you,—a medlar; then it will be the earliest fruit in the country, for you'll be rotten ere you be half ripe; and that's the right virtue of the medlar." The drift of this some of Shakspeare's best commentators have failed to see; and Stevens, not understanding horticulture himself probably, says as to it, "Shakespeare seems to have had little knowledge of gardening;" adding, the medlar is a late fruit, not an early! This, remarks Mr. Smith, Shakspeare knew well; and in this very peculiarity lie the wit and propriety of *Rosalind's* retort. To *Touchstone's* remark about the tree bearing bad fruit, *Rosalind's* reply may be thus interpreted:—"I'll graft it with *you*,—a meddling fellow,—a medlar; and, as you are already much decayed, you will change the character of the fruit by hastening its ripening before it is rotten, as all such decayed medlars tend to do; thus making this the earliest instead of the latest fruit."

The same play furnishes a passage equally misunderstood. *Rosalind* says she found the love-sonnet to her on a palm tree; on which Chalmers remarks, "A palm tree in the forest of Arden is as much out of place as the lioness in a subsequent scene." Now *palm* is another name for *willow*, and willow was the tree, therefore, on which the sonnet was *appropriately* fixed.

Mr. Smith has clearly made out his case, by help of the numerous quotations which he has gleaned from Shakspeare's works, in his interesting and curious little treatise.

Recollections of Eton. By an ETONIAN. With Illustrations by SIDNEY P. HALL. London: Chapman & Hall. 1870.

IT would not be difficult to find fault with this volume; to ask if Eton masters had taught the writer to say,—"With that he produced a couple of half-sovereigns, which neither of them *were* slow to accept," or "I paid him out for it, however, if it *was him*" (p. 196); and to point out that it is not the *grub* of the silk-worm that eats the lettuceleaves (p. 90), and so forth; but we have no desire to take that line. The book describes as a boy would describe life at Eton,—its sports and pastimes rather than its intellectual struggles,—and will give pleasure to many other boys.

Elementary Principles of Carpentry: a Treatise on the Pressure and Equilibrium of Timber Framing, the Construction of Floors, Roofs, &c. By THOS. TREDGOLD, C.E. Fifth Edition. London: Lockwood & Co. 1870.

To the third edition of Tredgold's well-known work, Mr. Peter Barlow added an appendix of considerable value, containing plates of roofs. The new edition, the issue of which we have now to announce, contains this with a full examination of the roof and vaulting of King's College Chapel, Cambridge. Some of Tredgold's tables are a little under the mark; nevertheless the volume ought to be in every architect's and every builder's library, and those who do not already possess the third edition, ought to avail themselves of the new issue by Messrs. Lockwood & Co.

Miscellanea.

The Historical Manuscripts Commission.—The first report of the Historical MSS. Commission has been published. The Commissioners say their object has been fully appreciated and favourably received. Many collections, the existence of which was unknown, have been brought to light and submitted to their inspection. They say that had the funds placed at their disposal for the appointment of inspectors been less limited, larger results would undoubtedly have been produced. Very important and valuable materials have already been brought to light, illustrating some of the least known periods of the history of Great Britain from the Saxon era down to the seventeenth century. The Commissioners hope that with enlarged powers of compiling and publishing calendars of the more important papers that may be brought before them, they will be able to render a most essential service to the historical student, not only in this country, but throughout the civilised world. In the Appendix (which consists of 133 pages) there are set out, as specimens of the results of the Commissioners' work, numerous documents of great historical interest. As a single instance out of many, we may state that in the collection at Montacute House, in Somerset, amongst a bundle titled "Law Papers," a collection of original documents relating to the Gunpowder Plot was found, of which the proprietor himself knew nothing, and probably the bundle had never been untied since the year 1612.

St. Mary Magdalene, Taunton.—The following notice has been freely circulated throughout the parish:—"The plan adopted by the parish in vestry provides free and open access, by steps, into the chancel, on the north and south from the cross-aisles, and on the west from the nave. The faculty requires strict adherence to the plan. The north and south entrances have been entirely closed, and that on the west obstructed by a wall and gates for its whole width. A few parishioners have commenced in the Consistorial Court, at Wells, to recover to the parishioners their right of unobstructed access to the chancel by these three approaches, in accordance with the plan and faculty and the vote of vestry thus illegally infringed, and appeal to their fellow parishioners for co-operation and support. Protestant principles as well as legal rights are clearly involved."

Artists' Benevolent Fund.—The sixty-first anniversary festival of this institution was celebrated by a dinner at the Freemasons' Tavern on Saturday, the 2nd inst. Viscount Enfield, M.P., presided, and in giving the toast of the evening, said the fund was established in 1810, and received from George IV., its patron, a royal charter on the 2nd of August, 1827. The Queen was now the patron of the institution, which consisted of two separate and distinct branches—the Artists' Annuity Fund and the Artists' Benevolent Fund. The Artists' Annuity Fund was raised and wholly supported by the contributions of its members for their own relief in sickness or superannuation. Three hundred artists were at present members of the annuity fund, and all artists of merit in painting, sculpture, architecture, and engraving were eligible to become members. The Artists' Benevolent Fund, for the relief of the widows and orphans of members of the annuity fund, was supported by the donations and subscriptions of the patrons of the fine arts, by artists, and by the annual contributions of the members of the annuity fund. Since the formation of the fund 30,812*l.* had been distributed in relieving widows and orphans of British artists. The toast of "The Chairman," proposed by Mr. S. Solly, and "The Royal Academy," given by the Chairman, and acknowledged by Mr. Lumb Stocks, followed. Mr. Godwin, in proposing "The Societies connected with the Fine Arts," expressed his opinion that in England young artists had not the same opportunities of obtaining the technical and manipulative knowledge of the painter's art as men had in France, where they were admitted to the studios of painters of eminence, and saw them at work. The result was that on the Continent an artist began his career where in England he too frequently left off. He should be glad to see our English artists opening their studios to young students more freely. Among the other toasts were, "The President and Members of the Artists' Annuity Fund," proposed by Captain Dighton; and "The Artists' General Benevolent Institution," given by Mr. C. J. Dimond. Mr. Lambton Young, the secretary, read a list of subscriptions, amounting to upwards of 450*l.*

New Episcopal Chapel at Culross, Scotland.—A new Episcopal chapel is now being built, at the sole cost of Mrs. Sharpe Erskine, of Dunimarle Castle, on a fine terrace in her grounds. This edifice, which is intended to bear the name of St. Serf, has been designed by Mr. R. Anderson, of Edinburgh, architect. The style adopted is Transition (end of the twelfth century), being the style exemplified in the earliest remaining parts of Culross Abbey. The building is intended to serve as a mortuary chapel for the foundress, as well as a place of worship for the Episcopalian families of the neighbourhood. It is of oblong shape, measuring internally 66 ft. by 18 ft. The east end is apsidal, and the west gable is surmounted by a belfry, having two tiers of openings for a peal of three bells. This gable is buttressed, and has a large circular window filled with tracery. The entrance to the chapel is on the south side, near the west end. The apse is lighted by five single-light windows, the semicircle internally being arcaded. The chancel has a two-light window on the south, and an archway on the north side for the organ. From the organ recess access is given to a small vestry. The nave is lighted by five single-light windows on each side. The whole of the chapel is vaulted internally with wood. The church will be fitted up in the usual manner for the clergy and choir, and the nave will be furnished with open deal benches for a congregation of about eighty.

Competition at Prescot.—The local board of this place have recently decided upon competition schemes for the sewerage and improved water supply of the district. The first premium of 100*l.* has been awarded to plans by Mr. Brierley, civil engineer, Blackburn, who has been retained to carry out the works. The second premium of 35*l.* has been awarded to Mr. W. A. Richardson, of Tranmere.

Passing the Glass with a Vengeance.—The other morning, at a draper's in Liverpool, a gentleman, instead of going out by the doorway, inadvertently stepped into one of the windows, which was empty at the time for the purpose of being redressed, and before any of the astonished salesmen could interfere had made his way into the street, through a very large thick plate-glass window. Fortunately, the only injury he received was a cut on the left cheek.

The Objectionable Sculptures on the Facade of the Paris Grand Opera House. M. Carpeaux assigned to a photographer, named Appert, the exclusive right, which he assumed to be still in his possession, of making photographic copies of his group of dancing girls. Another photographer, named Randnitz, conceiving that all the world has a right to photograph public buildings and their appurtenances, fixed his apparatus in the public street, brought it to bear upon M. Carpeaux's statues, which are popular, and placed in the shop windows a representation of the sculpture. M. Carpeaux and his assignee, M. Appert, brought an action against M. Randnitz for infringement of copyright. The Court of First Instance of the Seine rules, however, that the sale by M. Carpeaux to the Emperor's Minister, without making any reservation of the right to photograph his statues, was an absolute alienation and a bar to his action. MM. Carpeaux and Appert were, therefore, sentenced to pay 3,000 francs damages to M. Randnitz for seizing his photographs, and to defray all the costs of the litigation.

Masters and Men: Non-liability for Accidents.—A case of importance to workmen and their employers was tried at the Liverpool assizes on Tuesday last. A painter in the employ of a local firm was sent to work upon a scaffold which had been erected by other men in the same employ, and the structure giving way, the poor fellow was so seriously injured as to be permanently debarred from following his avocation. He now brought an action against his employers to obtain compensation. Mr. Justice Willes ruled that the action could not be maintained, for it had been decided over and over again that a master would not be liable for an accident happening to one of his workmen, through scaffolding erected by other of his workmen, unless some misconduct on his part were proved. It had been the law for the last thirty-three years that a servant could not bring an action against his master for the negligence of any other servant in the common employ. The plaintiff was accordingly non-suited.

Bilston.—At a special meeting of the Town Commissioners, after going through the modified plans for the enlargement of the baths, the Board accepted the following tenders:—Messrs. Thompson & Sons, for lengthening the boiler, and for a new tank, 21*l.* 10*s.*; Messrs. Claridge & North, for the engineer's work and new baths, 120*l*; Mr. S. Sansome, for the general builder's work for enlarging the swimming-bath, 180*l.*; and Messrs. Garratt & Holmes, for painting, 69*l.* Total, 390*l.* 10*s.*—At a recent meeting of local ratepayers it was resolved, by a large majority, to adopt the Free Libraries Acts.

Design in Berlin.—It has been determined to form an exhibition in Berlin between the 10th and 24th of the present month of April, with the object of generalising and elevating the study of drawing, in giving teachers and the public the opportunity of judging of results obtained, and of the efforts that are being made towards their improvement. The exhibition is to be divided into three groups; the first to consist of models and examples; the second of works of all kinds produced by pupils; the third, of instruments and materials of all kinds connected with drawing.

University of London.—The new building of the University of London, in Burlington-gardens, illustrated in our pages, will be opened by the Queen in person on Wednesday, May 11. Her Majesty will be accompanied by the Prince and Princess of Wales and the Princess Louise. We may venture to say it will be satisfactory to the profession should it be found that her Majesty intends to confer honour on the architect of this building, the merit of which is undeniable. Mr. Pennethorne is a public servant of long standing.

The Round Church at Northampton.—An appeal is being made to the public for additional funds for the completion of the restoration and enlargement of St. Sepulchre's Church, or rather for the restoration of the old round church as a vestibule to the new. For this 1,800*l.* in all are requisite, and of that sum 1,400*l.* have been subscribed. The round church is in a sad state, and cannot long be allowed to remain as it is.

The Taunton Surveyorship.—Mr. Hargreaves, surveyor, has sent in his resignation to the Taunton Board of Health, and it has been accepted.

City Market Accommodation.—At a special meeting of the Common Council last week, a motion was propounded by Mr. Rudkin for disestablishing Billingsgate and Leadenhall markets, and erecting in their stead a large fish and poultry market on ground belonging to the Corporation of London in the immediate neighbourhood of Smithfield. Mr. Fricker moved an amendment that it was desirable that the fish-market at Billingsgate and the poultry-market in Leadenhall should be enlarged and improved, and that the Markets Committee be instructed to obtain plans with estimates of the cost of such improvement, and submit them to the Court forthwith. Eventually, the amendment of Mr. Fricker was carried by a considerable majority.

The Exhibition Model of Lincoln Cathedral.—The *Gentleman's Magazine* devotes a rather lengthy paper to a description of "A Wonderful Building,"—that is, the model of Lincoln Cathedral made by a poor farm-labourer out of old bottle-corks, and which was exhibited at the International Exhibition of 1862. It took ten years, we are told, to build up this cathedral of corks, cut and filed to look like stone; and a million corks were consumed in the erection. It produced 800*l.* at the Exhibition, and has gained its inventor a yearly income ever since. "Altogether he calculated that he had reaped 3,000*l.* from the structure. For a small portion, even like the southern porch, with its cork angels and cork devils going to 'eaven and 'ell respectively, he had been offered 15*l.*; and for a single pinnacle, 2*l.*"

The New Corn Exchange, Cambridge.—This question is again postponed. Counsel's opinion as to the legality of purchasing property for the purpose of building a Corn Exchange is that the corporation had no power, under the several Municipal Acts, to do so. The market committee, therefore, after a good deal of discussion, have resolved that proceedings should be stayed, and that a further opinion of counsel should be taken on the subject. The local *Chronicle* states that advertisements for tenders for the new Corn Exchange had been sent for insertion in the local papers, and that Mr. A. D. Claydon had been instructed to sell the materials of the buildings now on the site.

The Northern Architectural Students' Society.—On Saturday, the 2nd, this society held its first out-door meeting at Seaton Delaval Hall. The members present inspected the interior as well as the exterior of this fine building. The hall was erected during the earlier portion of the eighteenth century, from the designs of Sir John Vanbrugh, architect. It was greatly injured by fire in the year 1822, and has not been restored. Fortunately, the destruction is mostly confined to the interior, so that the exterior is left almost intact. The Anglo-Norman church in the grounds was also visited.

Birds and the Fashion.—According to M. Pouchet, the architecture of birds has changed with that of men. In former days, when the swallow's nest was built against Gothic edifices, it made a semi-globular nest with a very small rounded entrance, but in the new streets of Rouen its nests are now found to be of a semi-ovoid instead of semi-globular shape, and the entrance is a long transverse cleft.

Worcester Cathedral.—The Dean and Chapter have contracted with Messrs. Collins & Cullis, of Tewkesbury, to pave the floor of the Lady Chapel and its two aisles, and also those of the north-eastern and south-eastern transepts and their aisles, with red and yellow Mansfield stone, white Portugal stone, and black marble, from designs of the thirteenth century, prepared by Mr. A. E. Perkins, the resident architect.

Worse and Worse.—The following tenders were sent in for alterations at 51, St. Martin's-lane, for Messrs. Hayward & Co. Mr. W. F. Potter, architect:—

Stokes & Gill	£429
Watson, Brothers	320
Perkins	295
Hammer	239
Honour (accepted)	153

Lectures on Health.—The Social Science Association have made arrangements with Dr. Guy, F.R.S., for the delivery of four lectures on "Health and Disease" in their economic relations. The first will be given on Tuesday evening, April 12th, at 8 p.m., in the room of the Society of Arts.

Sea Baths in London.—Negotiations are said to be going on to enable certain persons interested in bringing salt water to London for the purpose of providing sea baths, to carry out their object by means of the London, Chatham, and Dover Railway. The water is to be brought up from Herne Bay in tanks; and at so small a charge that a sea bath may be brought within the reach of any person of moderate means.

Industrial Art in America.—A plan is now before the Massachussets State Legislature, by which every town of a certain size will be compelled to maintain, in connexion with its town school system, an evening school for education in "the industrial arts."

The late Mr. Fripp, Architect.— The newspapers mention the death, on the 15th of March, at Ottawa, Canada, after a long illness, of Mr. Sidney Bowles Fripp, architect, youngest son of the late Rev. Samuel Charles Fripp, of Bristol, in his 47th year.

TENDERS.

For Christ Church, South Hackney, N. Mr. W. Wigginton, architect :—

Hill, Keddell, & Co.	£5,538 0 0
Howard	5,488 0 0
Killby	5,431 0 0
Ennor	5,110 0 0
Dove, Brothers	4,945 0 0
Axford & Whillier	4,875 0 0

For the erection of a school church, at Rowsham, near Aylesbury, Bucks. Mr. Frederick Gotto, architect :—

Haddon	£318 0 0
Fleet & Gibbs	301 11 0
Durley & Son	295 16 3
Whiting	293 0 0
Honour	292 0 0
Newman	279 17 6
Mayne	276 0 0
Osborn	270 0 0
Cooper (accepted)	265 0 0

For eight model cottages of six rooms each, at Knutsford, Cheshire, for the Knutsford Freehold Building Committee. Mr. Sherwin, architect. Quantities supplied :—

	Cottages.	Boundary Walls, &c.
Ellis	£863 1 11	£115 16 5
Massey	850 0 0	110 0 0
Whiteman	812 9 4	109 18 6
Cardwell	784 17 6	126 18 8
Burton (accepted) *	760 0 0	112 5 0

* Being 95*l.* per cottage, including fittings, grates, &c., and outbuildings. Competition designs were advertised for; the limit of cost being 100*l.* per cottage.

For villa residence, East Sheen, Surrey. Mr. E. Ingress Bell, architect. Quantities supplied by Mr. J. Gandy :—

Sharpinton & Cole	£1,800 0 0
Adamson & Son (accepted)	1,725 0 0

For the erection of a villa residence, at Fron-olen, Barmouth, for Captain Richards. Mr. Thomas Roberts, architect :—

Davies & Son	£780 0 0
Williams & Jones	734 0 0
Williams	730 0 0
Owens (accepted)	669 0 0

For Contract No. 3, Bognor Sea Defences, Sussex. Mr. Arthur Smith, engineer. Quantities supplied by Mr. G. W. Ranwell :—

Green	£2,326 0 0
Mills	2,310 0 0
Vickers & Crane	2,263 0 0
Bushby	2,257 0 0
Goble	2,234 0 0
Hayter	2,170 0 0
Warren	2,169 0 0
Quick	2,019 0 0
Blackmore	1,934 0 0
Harries (accepted)	1,807 0 0

For addition to infirmary at the Bethnal-green Workhouse, for the Guardians of Bethnal-green. Mr. Wm. Mundy, architect. Quantities supplied :—

Cook	£2,763 0 0
Lathey, Brothers	2,370 0 0
Borton	2,360 0 0
Higgs	2,247 0 0
Nightingale	2,222 0 0
Marr	2,156 0 0
Hill, Keddell, & Waldram	2,150 0 0
Blackmore & Morley	2,130 0 0
Capps & Ritso	2,090 0 0
Garrud	2,074 0 0
King & Sons	2,029 0 0
Wicks, Bangs, & Co.	1,990 0 0
Brown & Sons	1,950 0 0

For public-house and shops, Church-street, Preston. Messrs. Myers, Veevers, & Myres, architects :—

Jackson	£689 0 0
Tomlinson	643 0 0
Walker	640 0 0
Turner	639 0 0
Brown, Brothers	630 17 0
Huntington	626 0 0
Hull	618 14 0
Baines, Brothers	616 18 0
Clayton	614 10 6
Cowell & Clayton (accepted)	604 0 0

[Close tendering.]

For rebuilding Nos. 66, 67, and 68, Margaret-street, and No. 118, Great Titchfield-street. Mr. W. A. Baker, architect. Quantities estimated by Messrs. Richardson & Waghorn :—

Hyde (accepted)	£3,220 0 0

For the erection of two houses at Lower Clapton, for Messrs. Barrett & Son :—

Blackmore & Morley (accepted)	£640 0 0

For repairs, &c., Belsize House, Hampstead. Mr. H. A. Alexander, architect :—

Waterer	£910 0 0
Colls & Sons	870 0 0
Barrett	772 19 0
Mansbridge (accepted)	720 0 0

For alterations and repairs at No. 51, St. Martin's-lane, for Messrs. Hayward & Co. Mr. F. W. Potter, architect :—

		Housemaids' Closet.
Stokes	£429 0 0	—
Watson, Brothers	320 0 0	£35 0 0
Perkins	295 0 0	33 0 0
Hammer	239 10 0	—
Honor	153 0 0	10 0 0

For residence and livery stables, adjoining Railway Station at Putney, for Mr. Wm. Turner. Quantities supplied by Messrs. Williams & Taylor :—

Aviss & Co.	£3,496 0 0
Greig	3,467 7 0
Aries	3,460 0 0
Keble	3,138 0 0
Wigmore	2,999 10 0

For the erection of three houses, workshop, and gateway, for Mrs. Hoare, in West-street, Sutton, Surrey. Mr. Sparrow Harrison, architect. Quantities supplied :—

Martin	£957 0 0
Keal	897 0 0
Macers (accepted)	850 0 0

For alterations at Springfield Hall, near Chelmsford, for Mr. W. J. Beadel. Mr. F. Chancellor, architect :—

Brown	£1,700 0 0
Gardner	1,680 0 0

For new farm buildings at Little Braxted Hall, Essex, for Mr. Chas. Ducane. Mr. F. Chancellor, architect :—

Saunders	£1,800 0 0
Gardner	1,799 0 0
Brown	1,795 0 0

For new farm buildings at Parsonage Farm, Henham, Essex, for Mr. Joseph Baxendale. Mr. Fred. Chancellor, architect :—

Davies & Ratcliff	£1,299 0 0
Glasscock	1,263 0 0
Cole	1,090 0 0

For new hall and premises in Noble-street, City, for the Coachmakers' Company. Mr. Fred Chancellor, architect. Quantities supplied by Messrs. Karslake & Mortimer :—

Downs	£4,795 0 0
Hill & Sons	4,697 0 0
Turnor & Sons	4,659 0 0
Macey	4,439 0 0
Brass	4,340 0 0
Cooper & Cullum	4,328 0 0
Heushaw	4,283 0 0
Conder	4,268 0 0
Coles & Son	4,138 0 0
Brown & Robinson	3,980 0 0
Crabb & Vaughan	3,512 0 0

For new church and parsonage-house, Forth-end, Great Waltham, Essex. Mr. Fred. Chancellor, architect :—

	Church.	Parsonage.
Brown	£2,400 0 0	£1,518 0 0

For house and buildings, Ringer's Farm, Terling, Essex, for the Right Hon. Lord Rayleigh. Mr. Fred. Chancellor, architect :—

	House.	Buildings.
Gardner	—	£935 0 0
Saunders	£925 0 0	885 0 0
Brown	880 0 0	860 0 0

For new dairy, Terling, Essex, for the Right Hon. Lord Rayleigh :—

Saunders	£460 0 0
Brown	450 0 0

For new warehouse and drying-shed, Bermondsey-street, for Messrs. Todhunter & Blackmore. Mr. Elkington, architect :—

Little	£1,373 0 0
Wells	1,353 0 0
Coleman	1,329 0 0
Preston	1,327 0 0
Shepherd (accepted)	1,195 0 0

For Baptist Chapel, Peckham. Mr. Joseph Mitchell, architect. Quantities prepared by Mr. T. T. Green :—

Hart	£1,670 0 0
Croaker	1,657 0 0
Cullam	1,596 0 0
Jarrett	1,560 0 0
Tarrant	1,555 0 0
Thompson	1,540 0 0
Parker	1,490 0 0
Nutt	1,390 0 0

For the erection of the Bedford Arms Tavern, South-street, Marylebone. Mr. W. A. Baker, architect. Quantities furnished by Messrs. Richardson & Waghorn :—

Mitchell	£2,177 0 0
Manley & Rogers	1,900 0 0
Hill, Keddell, & Waldram	1,850 0 0
Phillips & Son	1,849 0 0
Brown	1,747 0 0
Brown & Robinson	1,670 0 0
Hyde	1,669 0 0

For additional training stables for Mr. H. Goater, at Littleton, Hants. Mr. A. Bedborough, architect. Quantities by Messrs. Curtis & Son :—

Grace & Hawkins	£800 0 0
Fillder	750 0 0
Stevens	683 0 0
Sanders (accepted)	676 0 0

For the erection of two houses, Queen's Walk, Nottingham, for Messrs. Carver & Davis. Mr. J. Collyer, architect. Quantities supplied :—

Attenborrow	£1,505 0 0
Marshall	1,398 0 0
Pogson	1,387 0 0
Dennett & Co.	1,348 10 0
Shepperson	1,319 0 0
Curtis	1,297 0 0
Collyer	1,288 0 0
Underwood	1,280 0 0
Wool & Slight	1,276 0 0
Bull	1,260 0 0
Messom	1,253 0 0
Vickers	1,245 0 0
Sedgwick	1,195 0 0
Andrews	1,140 0 0
Moore & Co. (accepted)	1,030 0 0

For the erection of a pair of villas, Clipstone-avenue, Peel-street, Nottingham, for Mr. William Hodgson. Mr. J. Collyer, architect. Quantities supplied :—

Ellis	£1,179 0 0
Jelly	1,170 0 0
Vickers	1,168 0 0
Bell & Son	1,126 0 0
Curtis (accepted)	1,100 0 0
Andrews	1,078 0 0

For the erection of New County Court Offices, Durham. Mr. Thos. Chas. Sorby, architect. Quantities supplied by Mr. John Scott :—

Gibson	£3,100 0 0
Taylor	3,053 0 0
Scott	3,000 0 0
Gradon	2,955 9 0
Lowrey	2,896 8 0
Robinson & Marshall	2,893 4 3
Robson & Son	2,784 0 0
Foster, jun.	2,565 0 0
Sanderson (accepted)	2,426 0 0

For building premises in High-street, Kensington, for Mr. Wickham. Mr. Josiah Houle, architect. Quantities by Mr. D. Cubitt Nichols :—

Patman & Fotheringham	£3,025 0 0
Temple & Foster	2,945 0 0
Ennor	2,920 0 0
Macey	2,892 0 0
Chamberlain, Brothers	2,863 0 0
Stimpson	2,794 0 0
Cowland	2,750 0 0
Axford & Whillier	2,698 0 0
Hockly	2,658 0 0
Langmead & Way	2,634 0 0
Scrivener & White	2,512 0 0

For building two houses and shops in High-street, Kensington, for Mr. James Broadbridge. Mr. Josiah Houle, architect. Quantities by Mr. D. Cubitt Nichols :—

Ennor	£2,498 0 0
Temple & Forster	2,486 0 0
Macey	2,440 0 0
Chamberlain, Brothers	2,399 0 0
Langmead & Way	2,397 0 0
Stimpson	2,393 0 0
Cowland	2,350 0 0
Axford & Whillier	2,330 0 0
Scrivener & White	2,288 0 0

For paving and carriageway in part of St. Ervan's-road, and Acklam-road, Westbourne Park Estate, for the Land and House Investment Society (limited). Mr. Josiah Houle, surveyor :—

Howlett	£1,333 0 0
George	1,269 10 0
Horsman	1,225 0 0
Nowell & Robson	1,210 0 0
Crockett	1,203 0 0
Hayden	1,200 0 0

For building the vaults in part of St. Ervan's-road and Acklam-road, Westbourne Park Estate, for the Land and House Investment Society (Limited). Mr. Josiah Houle, surveyor :—

Crockett	£649 0 0
Roberts, Brothers	646 0 0
Ireland	619 0 0
Howlett	544 0 0
Blight & Baron	463 0 0

TO CORRESPONDENTS.

J. S. Davis.—C. E.—T. T. G.—S. H.—J. C.—M. U.—H. S.—Mr. E.—A. W. P.—W. H.—W. S.—B.—J. W. K.—C. L. E.—C. G.—E. A.—A. B.—F.—R. G.—F. G.—L. S.—Architect.—W. F. L.—J. S.—E. J. B.—C. S. M.—C. S.—Mr. D.—H. A.—H. S.—H. B. W.—M. H.—Miss Z.—A. J.—B. & M.—A. W.—Mr. C.—T. C. S.—J. B. (photographs received, but no *particulars*).—G. & Son (amount of premium depends materially on the position of the parties, the advantages to be expected, &c. and cannot be settled by an outsider).—Z. (the number in advertisement should have been 18, not "88").—Mr. Remington's letter on Channel Railway shall have consideration next week).—M. C. (look to Cresy's "Encyclopedia of Engineering").—Carver (the process in question has been applied at the Houses of Parliament, but not to any great extent. We decline to recommend any of the processes.—New York (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

TO SUBSCRIBERS.

GOOD FRIDAY.

NOTICE.—"THE BUILDER," for the week ending APRIL 16th, will be published at ONE p.m. on THURSDAY, 14th inst. Advertisements for insertion in that Number must therefore reach the Office **before THREE p.m.**, *on WEDNESDAY, 13th.*

TOWNS DRAINAGE and SEWAGE UTILIZATION COMPANY.

CHAIRMAN—Sir William Wheeman, Bart. K.C.B.
ACTING ENGINEER—Mr. Bailey Denton, Whitehall-place.

This Company prepares plans, specifications, &c. and reports on plans already prepared; supplies the funds necessary for the execution of the works, and if required, undertakes the execution of such works. The Company also undertakes to purchase lands for the reception of sewage.—Particulars obtained of Messrs. Bailey Denton, Son, & North, Whitehall-place; or of Mr. HENRY DUDLEY COOPER, Secretary, No. 41, Parliament-street, S.W.

TWICKENHAM.

MR. J. N. GOATLY will SELL by AUCTION, at the ALBANY HOTEL, Twickenham, on TUESDAY, APRIL 19th, 1870, at THREE for FOUR o'clock in the afternoon, the following property, which is situate within a few yards of the Twickenham Railway Station:—A pair of brick-built carcasses, standing next to the Albany Hotel, a pair of unfinished brick-built private houses, known as No. 11 and 12, Chepstow-villas, the unfinished building of five houses standing next to Chepstow-villas, five newly-built shops and dwelling-houses, complete with plate glass fronts, situate in the Station-road, estimated to produce from 35l. to 40l. per annum each; a detached private residence, completely finished, with conservatory and garden 150 feet long, situate at the end of Sherland-road. A lease for 99 years direct from the freeholder will be granted free of expense to each of the above-mentioned houses at a ground-rent of 6l. 10s. per annum for each house. May be viewed, and particulars and conditions of sale obtained at the Albany Hotel, and of the Auctioneer, Twickenham.

Crown 8vo. cloth, gilt side, 6s.; gilt edges, 7s.
Illustrated with full-page engravings by G. CRUIKSHANK, &c.

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The Builder.

VOL. XXVIII.—No. 1419.

*Recent Travels in Asia Minor.**

AT the present moment public attention is directed towards that long-neglected country which is evidently destined to become the road to our Indian possessions. Whether it be true or not that the Ottoman Government has granted a concession to a French company to carry a line of railway throughout the length of Asiatic Turkey, which is eventually to be extended to Bagdad, and so on to the frontier of India, it is certain that such a line will be made, and that probably before many years have elapsed. The plains of Asia Minor have already been invaded by two conquerors greater than Sesostris and Alexander,—since they carry civilisation in their train;—steam and electricity have already commenced their inroads on that vast continent; telegraphic wires already traverse the highlands, cross the mountain ridges, and dip into the ocean in remote bays on its coasts, while the shrill whistle of the locomotive already rouses the eagle from his eyrie on Mount Sipylus, and startles the cranes and pelicans on the borders of the Cayster and Mœander. Where there are railroads, civilisation must follow; and though at present this country presents the strange anomaly of possessing no roads but iron roads, and though the trains frequently pass close to the haunts of brigands who live in defiance of the Government, yet all this apparently chaotic state of affairs will be set right at last, and probably this naturally prolific country will be at some future time colonised and cultivated by settlers from the West.

* "Travels in little known Parts of Asia Minor, with Illustrations of Biblical Literature and Researches in Archæology." By Rev. Henry J. Van Lennep, D.D., thirty years Missionary in Turkey. London: John Murray, Albemarle-street. 1870.

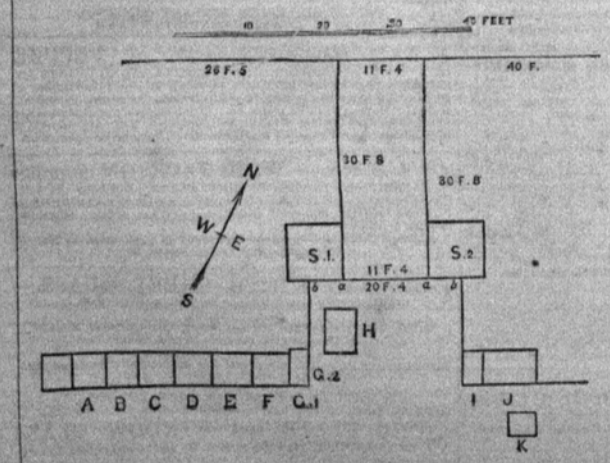
We speak advisedly when we use the term "much neglected" with reference to it; for, notwithstanding the fact that it was the theatre of some of the most important events in the history of the early world, and the stage on which strutted the imperial puppets Sesostris, Cyrus, Crœsus, Xerxes, Alexander; though the finest temples of antiquity graced its soil; and though it has formed a theme for historians and poets from the time of Homer, about as much is known of the interior of the country as of that of the Great Sahara. The travellers who have traversed the continent, and left any record of their journeys, may be easily enumerated, as they probably do not amount to more than a dozen. Paul Lucas, Leake, Texier, Hamilton, Fellowes, and Ainsworth, are, indeed, all whose names occur to us. With the coasts, however, we are better acquainted, as Le Brun, Pococke, Chandler, and Arundel have described them, and the Budrum expedition and the various missions of the Dilettanti Society have made us in some measure acquainted with their ruined cities and temples; but about the interior we have but little information. Therefore the works of all the "pioneers" have an especial interest for us at this period of awakening interest in the future prospects of Turkey; and for that reason we welcome with pleasure Dr. Van Lennep's volumes, containing an account of a journey from Samsoon, on the Black Sea, to Smyrna, and of several excursions to the right and left of the main route made for the purpose of visiting ancient sites. Dr. Van Lennep having resided thirty years in the country as a missionary, and being acquainted with the various languages spoken by its inhabitants, being thoroughly versed in the manners and customs of the people, and having also a taste for antiquarian pursuits, was, as may be suppose, well qualified to give us an accurate description of everything he saw during this interesting journey of five months through some parts of the country but little known, and through others entirely unknown. Leaving Samsoon in April, 1864, he visited Amasia, the capital of the kings of Pontus, then proceeded to the important town of Tocat, from which point he made excursions to Sivas and the Star Mountain, and afterwards started on his journey across the continent, going by way of Yuzgat, from which point he visited the interesting ruins of Pterium and Euyuk; thence to Angora, the ancient Ancyra, Sevri-Hissar, and the ruins of Pessinus, Afion-Kara Hissar, Ooshak, Sardis, and so on to Smyrna.

On referring to the map of Asia Minor it will be seen that he thus passed through almost the entire length of Asia Minor, and through the most important parts of Pontus, Galatia, Bithynia, and Phrygia, provinces in which there are many ancient sites still to be identified.

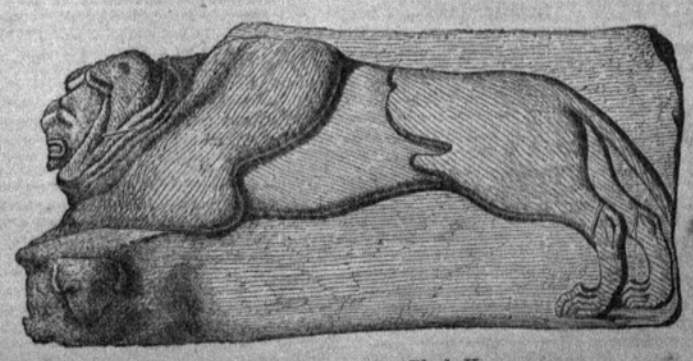
To architects and antiquaries the most attractive portion of his book will be that in which he throws light upon one of the most obscure pages in the history of art,—the art of what Professor Donaldson has aptly termed "Anterior Asia," to which are due the sculptures of Pterium and Euyuk, the tombs of Midas and other Phrygian kings, many of the monuments of Lycia, and all those remains which present no sign of Greek, but many marks of Asiatic, Phœnician, Assyrian, or even Egyptian influences. We all know that certain discoveries have of late years shown that some of the early sculptures in Asia Minor, such as those of the Sacred Way at Branchidæ and the tombs at Urgub, exhibit an imitation of Egyptian forms; and that Phœnician origin may be attributed to the grotesque animals on the architrave and frieze of Assos. We can also trace Egyptian taste in the sarcophagi of the kings of Sidon which are in the Louvre; but in no place is there to be seen such a combination of Egyptian details and Assyrian plan, as in the palace of Euyuk, which Dr. Van Lennep has been the first thoroughly to describe and illustrate. We see here two gigantic sphinxes,—creatures of Egyptian origin rarely to be met with in Asia Minor,—guarding the entrance and supporting pilasters, exactly supplying the place of the winged bulls in the palaces of Nineveh; on either side are large blocks of granite or basalt, with processions of figures carved on them, forming the basement of two wings, which probably supported colonnades, as in Mr. Fergusson's restoration of Persepolitan architecture.* We are enabled to reproduce a plan of the best-preserved portions of the building. The sphinxes are marked on the plan S. 1 and S. 2.

Beyond the sphinxes was apparently the principal corridor of the palace; but everything beyond that has disappeared. A striking proof of the Egyptian origin of these buildings exists in the fact that the god Apis occurs twice in the series of carvings. Hamilton visited the ruin, but describes the sphinxes as enormous birds. Both here and at Pterium Dr. Van Lennep made careful drawings and measurements, which tend to illustrate thoroughly these important remains The rock carvings at Pterium are well rendered, and show a thoroughly Assyrian character. They occupy the sides of a gorge, which appears to have formed the entrance to a regal sepulchre. The carved surface extends for a length of 124 ft., the figures varying in height from 2 ft. 10 in. to 4 ft. 10 in. Dr. Van Lennep confirms M. Texier's opinion that these

* See p. 306.



Plan of Temple at Euyuk.



Side View of Carving on Block K.

processional rows of figures, which represent the meeting of a king and a queen, each attended by a long train of attendants, signify the introduction of the worship of Astarte, the Syrian Venus Urania, into Phrygia. We refer those who feel interested in the question to the book itself, in which the subject is fairly put before the reader, and thoroughly illustrated.

Amongst the carved blocks of the Palace of Euyuk, is one which bears the figure of a lion devouring a ram, or more probably a bull. Of this, which is marked K on the plan, we give a representation. This mysterious emblem, which has never been satisfactorily explained, is frequently met with on the early monuments of Asia, and seems to us to have been imported from Phœnicia, since the earliest example of it we know is to be found on the coins of one of the kings of Sidon. Amongst other places it is to be found on the rock tombs of Lycia. Dr. Van Lennep gives an engraving of another from Amyra, and Mr. Pullan dug up a similar group near Claros and Colophon (see Texier and Pullan's Cities of Asia Minor).

At Angora our traveller visited the ruins of the Temple of Augustus. We do not agree with him in the supposition that the yellow tint observable on the marble there and at the Parthenon arises from the fact that the surface has been gilt; but we think that it has been toned down by a coating of yellow encaustic preparatory to the application of the reds and blues by which the mouldings were relieved, and the friezes heightened, in all buildings that were polychromatised.

By far the most interesting chapter in the book is that in which Dr. Van Lennep sets at rest the vexed question relating to the figure carved on the face of Mount Sipylus. High up on that part of the mountain which overlooks the town of Magnesia and the valley of the Hermias there is to be seen a niche, 35 ft. high, in which is a rudely-carved head with the bust of a female figure. All former travellers have in rotation repeated that this figure represents Cybele, the mother of the gods; but Dr. Van Lennep satisfactorily proves it to be that of Niobe. He remarks that though the features are obliterated, the figure has been so arranged that when it rains, two streams of water fall upon the breasts and so trickle to the ground, as perfectly to represent the flow of tears, and that these streams have in the course of centuries left a bluish deposit on the surface of the rock, which is visible from the plain below, in the form of two dark streaks down the bust and the pedestal on which it stands. This, he says, with justice, must be the "stony Niobe, all tears," described by Homer when he thus sang:—"Upon arid Sipylus, upon the rocks of the desert mountain . . . . Niobe, though turned to stone, still broods over the sorrows the gods have sent upon her." And by Ovid with still greater precision:—

> "She weeps still, and, borne by the hurricane of a mighty wind,
> She is swept to her home. There, fastened to the cliff of the mount,
> She weeps, and the marble sheds tears even now."
> *Ovid, Met.* ii. 310.

Again, Pausanias, who visited it, says:—"When standing close to it, the rock and precipice do not show to the beholder the form of a woman weeping or otherwise; but if you stand farther, you think you see a woman weeping and sad." ("Attica," l. i. 21, 5.)

Another coincidence in support of M. Van Lennep's view exists in the fact that the figure is on the mountain of Sipylus,—the son of Niobe; and not far from the lake of Tantalus,—the father of Niobe. Our author, however, starts the theory that the figure may have existed from the earliest times, and may have been intended originally to represent Cybele, but that the myth of Niobe may have been derived from it. His explanation of this view is so very ingenious that we give it in full:—"Certainly, the whole scene around us at this moment agrees remarkably with the Grecian legend, and may be looked upon as the very birthplace of the myth of Niobe. She is the daughter of Tantalus over whose head, remember, the rock was always hanging ready to fall. Tantalus is nothing else than a rock hanging poised in the air (*ταλαντεύω*), ever threatening to come down, an exact description of the constant disintegration of the face of the hills in this region. Niobe, in her deep-cut alcove under the over-hanging rock, is the 'daughter of Tantalus.' She is as Cybele, the great mother—her very boast; and her children struck down to earth, 'slain by Phœbus and Diana,' are the masses of rock, such as we have just passed over, that fall into the valley, separated from the cliffs by the action of the sun and rain. 'They lie unburied on the plain,' Homer tells us, 'till on the tenth day after, the heavenly gods bury them;' the fallen rocks break up under the influence of the weather. Here, in these mountains of Sipylus are the couches 'of the divine nymphs that dance or stream about Acheloüs;' that is, in this hill now above us are the springs from which flow down the streams that feed the Acheloüs at our feet;—Acheloüs, 'the son of Sol,' springing, that is, from the melting of the snows in summer. . . . . Carved in the most remote antiquity to represent, it may be, Cybele, the deity of a race that preceded the Greek immigration, the circumstances that gathered round it gave rise in the minds of the imaginative Greeks to the whole beautiful legend of Niobe, all stone and all tears, as we see her at this moment, and we here look upon a monument that was even to Homer an object of venerable and unknown antiquity, a monument antecedent not only to history, but in some sense to mythology itself."

FREEMASONRY.*

A GERMAN writer not long ago completed a history of Freemasonry, from, of course, a German point of view, which met with considerable approval in his Fatherland. It was translated into English, and mentioned in our pages at the time. A second edition of the English version has now appeared.

Wide, generous, and pleasant, with its cornfields and vineyards, universities and meerschaums, traditions of free cities and great guilds, Germany is the very site for the luxuriant growth of an embracing, expansive, brotherhood, like that of the Freemasons; but it is not of the German lodges, so much as of the society generally, that we are minutely informed in this work. In various parts of Europe and America there are, at the present day, about 9,000 lodges, with 70 grand lodges, to which they are subordinate, forming invisible connecting lines of fellowship over this vast surface, having for asserted aim the exaltation of mankind in morals. The histories of these lodges in modern times are doubtless of interest, if only for the record of well-known names among the members, such as Elias Ashmole in an English lodge, Thomas Boswell, of Auchinlech, in a Scottish one; Daniel O'Connell in an Irish one; and Benjamin Franklin in a Pennsylvanian lodge; but it is the ancient history of Freemasonry properly spoken of now as its legends and superstitions, that will have most attraction for non-masonic readers.

The legend that every one is supposed to know runs to the effect that the four children of Lamach, and his two wives, Ada and Sella, founded the beginning of all the sciences in the world. The eldest son, Jabal, pursued the science of geometry, and abandoned his flocks and herds to build with stones and trees; his brother Jubal founded the science of music; his brother Tubal Cain founded smithcraft in all metals; and his sister founded the craft of weaving. Having a foreknowledge of the punishment about to fall upon mankind, they engraved their sciences on two stones, so that they might not be lost when the "vengeance for synn" came. One of these stones was of marble, in the belief that it would not burn if fire consumed all else upon the face of the earth; the other was "clepped laterns," supposed not to be able to drown or sink in any water, if a flood should be the means of destruction. After the deluge, the great-grandson of Noah found one of these stones, and saw the science written on it, and taught it to other people. "And at the making of the Tower of Babylon there was masonrye first made much of." Nimrod was a mason as well as hunter, it seems, and fond of his science, or, as we should now say, trade. And when the city of Nineveh and other cities in the East were to be built, he sent his cousin, the king of Nineveh, threescore of masons to assist him. We quote the legend:—"And when he sent them forth, he gave them a charge on this manner. That they should be true each of them to other, and that they should love truly together, and that they should serve their lord truly for their pay; see that the master may have worshipp, and that long to him. And other moe charges he gave them. And this was the first tyme that ever mason had any charge of his science." From this little band of masons, bound together as strangers in a strange land, possessed of the knowledge of a craft that was beyond the understanding of the dwellers in tents, according to this story, came Freemasonry.

So far this legend, with its patriarchal belongings, and surroundings, and discrepancies, its clink of pre-historic tools, on pre-Noachian tablets, and sight of Tyrian shipmen, and scent of cedarn forests.

German sympathies favour the supposition that Freemasonry really arose from the confederation of the Strasbourg stonemasons employed in building the cathedral. All that has been said in favour of this view is urged over again, lucidly; beginning with the first suggestion of the possibility made by the Abbé Grandidier in 1778; though nothing is left unsaid that could be given in explanation of the statement made by some writers that the confederacy commenced at the building of Magdebourg Cathedral in 876. The claims of the eleventh century are also gone into. After the panic that the world was coming to an end subsided, building operations were carried on with great energy and new life, and these drew masons together into long and close intercourse:—

> "The erection of these edifices united masons, especially stonemasons, together in large numbers. As they were so long engaged upon the same building, the workmen were brought into very close contact; while the practice of the same art, their uniting to carry out the same design, and the combination of their artistic faculties, united them still more, and was the cause that gradually arose from their body the fraternity of German stonemasons."

A symbolic language gradually took shape, formed of figures and ciphers, in which was framed a guide to the practice of the art. Every mason had to learn this; and no apprentice was admitted into the brotherhood who was not of sufficient capacity to be able to do so. "Mathematical axioms and geometrical figures, garnished with mystical hints, Biblical allusions and interpretations, whence the Gothic proportions were derived, and upon which they were based, with the rules prevalent in the Gothic style, formed the innermost and secret aim of the whole design."

A prominent place is given to the history of Freemasonry in England. The author says there is scarcely a doubt but that a considerable proportion of the builders of our larger edifices of the fourteenth century were Germans, and that the architects of that time were German masons; and the names of Schaw, Swalwe, Lote, Ambler, Bald, Beyst, Brekeling, Derlyng, Evers, Felter, and Fubrig, are brought forward as evidence. The English masons soon followed their example in forming themselves into associations whose members recognised each other by signs, held meetings and acted in concert.

> "Meetings were held regularly wherever buildings were in the course of erection. Their lodges were opened at sunrise, the master taking his station in the east, and the brethren forming a half-circle round him. After prayer, each craftsman had his daily work pointed out to him and received his instructions. At sunset they again assembled after labour, prayer was offered, and their wages paid to them. In stormy weather the craft assembled in a convent hall, or some other sheltered place; but in fair weather their meetings (lodges) were held in the open air, generally on the top of a hill, where no one could listen to their proceedings."

This is difficult to reconcile with the frequent disputes among the masons in the reign of Edward III., disclosed in the records of the corporation of London, and detailed in these columns in our notice of Mr. Riley's memorials of London; which disputes the lord mayor considered arose from the circumstance that the masons were not subject to "the government of folks of their trade;" and endeavoured to settle their differences by the reception of a deputation, who were empowered to draw up articles by which they would abide. Unless, indeed, we take it for granted that the stonehewers with whom the light masons and setters quarrelled were not Freemasons, and the others were, or *vice versâ*. The term Free-mason is met with, curiously, for the first time in this reign, 1350. Although self-government appears to have been put into their hands then, it was taken out again in the reign of Henry VI., when they were forbidden to assemble. Coming down to post-reformation times, and the introduction of the Renaissance by Inigo Jones, we are told the old symbols lost their work. "Instead of the buttress,

* "The History of Freemasonry, from its Origin down to the present Day." By J. G. Findel. Revised and Preface written by D. Murray Lyon. London: Asher & Co., 13, Bedford-street, Covent Garden. 1869.

plain walls with pilasters were seen; instead of the pyramids ambitiously rising towards heaven, a drooping Italian cowl was set upon the top of the little fragile tower; the tall slender pillars, which supported the arched roof of the church disappeared, and ornaments of tasteless scrolls supplied their place. Thus did German art, so honoured and revered, sink to the tomb, the Fraternity on this account undergoing a mighty revolution." It is supposed that the institution would have sunk into oblivion at this time, if it had not been for the circumstance that persons who were not operatives began to enter it as members. Hitherto only masons, stone-cutters, and carpenters were Freemasons, unless we may count the ecclesiastical and secular patrons of the craft as such; but after this time, persons of different occupations, and others following none at all, were admitted as members. It was in the year 1600 that Bozzy's ancestor was chosen warden of St. Mary's Lodge, Edinburgh. In 1641, Robert Moray, quartermaster-general of the Scottish army, was made a master-mason; in 1646, Elias Ashmole was made a mason at Warrington, Lancashire; and in 1670, the earls of Cassillis and Eglinton were received as Apprentices at Kilwinning. By degrees, practical knowledge was superseded by the pursuit of truth, freedom, and virtue, as the bond of union. The operative masons handed down their traditions and charges to a mixed brotherhood of various ranks and creeds bent upon developing their fund of intellectual capacity and moral rectitude. Innovations crept in, "high degrees," or "high grades," grand-masters, the grand orient, and other elaborations upon the three degrees of old, apprentice, fellow-crafts, and masters, which introduced dissensions in different countries, and which are all related by Mr. Findel. The ever-extending brotherhood occasionally spread into the orbits of other societies, such as the Rosicrusians and Illuminati, only, however, to retreat again within its own boundaries. And although each country has its own traditions, and its own grand lodges, they have the same aim of universal peace and goodwill. Nevertheless, Freemasons find it as difficult to overcome their prejudices as ordinary mortals. We read that the American brothers could not get over their deeply-seated sense of the inferiority of coloured men; for when the coloured lodge of Boston applied to the grand lodge of Massachusetts for a constitution, at the close of the last century, it met with a refusal.

Among the documents appended is the form of an examination of a German "Steinmetz,"—stonemason. We pick out a few questions for extract:—

Warden.—How do we recognise a mason?
Stranger.—By his honesty.
Warden.—Where was the worshipful craft of masons in Germany first instituted?
Stranger.—At the Cathedral of Magdeburg, 876.
Warden.—What was the name of the first mason?
Stranger.—Anton Hieronymus, and the working tool was invented by Walkan. (Perhaps corruptions of Adonhiram and Tubal-Cain.)
Warden.—How many words has a mason?
Stranger.—Seven.
Warden.—What are they?
Stranger.—God bless all honesty, God bless all honourable wisdom, God bless the worshipful craft, God bless the worshipful master, God bless the worshipful warden, God bless the worshipful society, God bless all honourable promotion here, and all places on sea or land.
Warden.—What dost thou carry under thy tongue?
Stranger.—A praiseworthy Truth.

Freemasonry has come to the front lately in two distant parts of Europe. It was the Masonic lodges of Madrid that conducted the funeral of Don Enrique de Bourbon a few days ago; filling the chamber of death with Masonic symbols, and placing on the coffin, with the dead prince's sword and sash, more Masonic emblems; and sending 600 fellow Masons as mourners to his grave. Again, though the fraternity takes no part in political or ecclesiastical contests generally, the Grand Lodge at Baireuth has now broken this transcendental silence, and issued a circular directing attention to the proceedings of the Œcumenical Council, vindicating the right of the society to exist in spite of ecclesiastical opposition, and calling upon members to perform the moral duties with zeal and exactitude, and uphold the freedom of science and of conscience. The adhesion of H.R.H. the Prince of Wales has given Masonry a fresh spurt in England. At the recent dinner in aid of the Boys' School, at which the Prince presided, more than £10,000 was subscribed. If modern Masons are not otherwise practical, they certainly are so in charity. Attention thus drawn to the subject, many will, doubtless, like to get some particulars of this remarkable organisation, now numbering about 600,000 members; and to these we commend Mr. Findel's book as containing much of the information they require. It is freer from nonsense and error than other attempts of the kind, but the real history of Masonry has yet to be written.

BRIGHTON, AND ITS POSSIBLE FUTURE.

To write something new about Brighton is a task not easily accomplished. "The Queen of Watering Places," as some are pleased to designate it, has been often described. Artists by the score have sketched the picturesque of its inland boundaries and outer beach; tourists have traversed its every nook and cranny, and where the guide-book compiler failed to find something worth describing, he invented a fancy scene to fill up the hiatus. Our notes in Brighton are of a current nature, and of another kind. They relate more to things that ought to exist, and to things that ought not, for the well-being of the town, and the cause of social reform and sanitary improvement.

In looking at Brighton to-day, we must, however, glance at it retrospectively as well as in the face, and judge how far, with all the acknowledged facilities it possesses, its public boards are doing their duty for improving its condition by adapting the obvious measure whereby towns are made beautiful and ornamental without ceasing to be prosperous and healthful.

Brighton is rapidly increasing in population, and of course in area. In fact, it is becoming a little London of fashion, a little sea-side metropolis of ease to the greater city capital by the Thames. But unlike the City and other large towns, Brighton is but the creature of circumstances, which cannot be said to be perpetual. The progress and the wealth,—yea, even the existence,—of the most favoured and fashionable watering-place, rest on an unstable foundation.

During the last fifty or eighty years towns in England that promised to occupy positions like Brighton, and actually did as a resort of fashion, or as an Elysium for invalids, have been deserted, and have consequently gone into neglect and decay. We have had inland watering-places, lake districts, and woody defiles in this country that have coaxed our fathers and grandfathers during their pleasure tour in holidays of old—places which not to have seen was considered to be the deprivation of the greatest enjoyment. Many of these favoured spots have faded, or are fading, out of sight. Notwithstanding railway communication, Bath of to-day is not the Bath when George III. was king. Nor is Tunbridge of the "Wells," Cheltenham of the "Springs," or Leamington of the "Spas," what these once were. Some of the once fashionable resorts, even on the majestic Thames, and on our midland and northern rivers, are dying or drooping. New seaside resorts are springing up daily, because fashion is capricious and exacting, and is always athirst for something fresh and new. But, exclaims the reader, what has all this digression to do with Brighton? That it is not irrelevant, perhaps we shall show before we conclude.

Brighton probably contains nearly 80,000 inhabitants, and this amount is supplemented in the visiting season by perhaps little short of two-thirds of the above number, who come as sightseers, visitors, or temporary inhabitants. This influx of humanity is accompanied with an increase of wealth and capital, and on this immigration Brighton, as a town, in a great measure, depends. Were the tide of fashion to veer round suddenly, we have no hesitation in saying Brighton, "the queen of watering-places," would collapse, with all its shining brilliancy, like a soap balloon. The simile, though not a graceful one, yet we venture to say, is tersely true. Brighton, in a word, is a lodging-letting and shop-keeping community. Its permanent inhabitants are a population of parasites, and the visitors are the plant it feeds upon. On this we take our stand for our survey, and from this standpoint we draw the attention of all Brightonians and Brighton reformers, corporate and auxiliary, to the question of how they can best improve the permanent well-being of their town. Of local trade and manufacture Brighton possesses little indeed, and, owing to the demand for house property, the building trades are its best representative crafts; but even the trades connected with the building interest are feeling the pinch of late in the town as well as those of London, and from similar causes. Too many flock there in season, as they do to the metropolis, in quest of labour, and the market gets overstocked. At the present moment and during the winter past there was much want and destitution in the town. The poor-house contained a good number of mechanics, and its board have been employing the surplus labour in the making of a new cemetery. We heard of two hundred hands being employed on this work, for which the pay amounted to about a shilling a day with a loaf or a loaf and a half, according to the number of the workman's family. The Corporation of Brighton have also been obliged to relieve the distress of the unemployed in the town by putting on hands at the beach, in the construction of a new roadway or promenade under the eastern cliff. A half loaf, it is truly said, is better than no bread, and it is a commendable thing to give even a little employment, that men may not starve in the midst of plenty.

There is work, however, in Brighton that requires execution and preference for the welfare of the town, even before that of constructing promenades or beautifying the approaches to the cliff. There are a number of new streets that either require to be opened or widened at right-angles to the King's-road, or beach; and the centre of the town requires to be better opened by a few wide leading thoroughfares. Breadth of opening and light and air exist on the surroundings of the Old Steyne and along the Grand Parade, but let one for a moment diverge from those open thoroughfares into the narrow defiles or lanes, dignified with the name of streets, on either side, and how stand the sanitary data. We shall not complain of the break-neck character of the streets, for their incline is unavoidable; we shall only note that many of them are painfully narrow and confined, and that their outlets are not what outlets ought to be in a much-visited town like Brighton.

The stability of some of the houses is an open question, but their back-yard accommodation and drainage is a sanitary question, though also an open one, and calls for closer attention and discussion. We do not deny that the Brightonians are making, and have recently made, some efforts towards an improved system of drainage; but why stop half-way? Bad drains and noisome smells must be stamped out, like the rinderpest, if health is ever to be thoroughly established, and guaranteed to poor and rich alike.

Some few ladies in Brighton, with excellent intentions, are stirring themselves in the matter of sanitary reform; and, with that discrimination that must be ceded to the sex whenever they sincerely strive to be humanely useful, they are acting on the principle that prevention is better than cure. But how far are they likely to be successful? To pay a few flying visits to one or two quarters of the town, with a few disinfectants corked up as if they were perfumes, and to distribute them to the poor as one would smelling salts? A mission of this sort will not accomplish much to kill the germinating seeds of disease.

Sanitary reform is a cause in which women can render much valuable assistance. Ladies with a little money to spare, and some leisure time on their hands, can be ministering angels to God's poor. They can aid in putting fire in the family grate, food in the cupboard for the little ones, and they can help the poor wife to tide over her illness. Their visits will also help to cheer the anxious, care-worn, and unemployed partner of her sorrows. A little relief and advice judiciously distributed in hard seasons works a wonderful amount of good. In whatever tends to make the poor man's home clean, healthy, cheerful, and neat, there a true and charitable woman's chief mission lies. But outside the threshold of the home man's real labour commences; and so with corporate bodies and public boards. They hold the public health more or less in their keeping. Their negligence of the common duties, or their ignorance of the simplest principles that govern health or prolong human life, may be the cause of sweeping hundreds of valuable lives to premature graves.

If those in authority in Brighton wish to improve the town, socially and morally, they must be more sanitary wise; and we would also recommend to their notice, now that houses are being run up in new quarters, that the breadth of roadway, and the outlet thereto, are of consequence. It would be hard to describe what figure Brighton represents. Built after no well-conceived design or plan, the town, as looked upon from an elevation, is a regular jumble of houses, up hill, and down hollow. Even in the

most fashionable quarters of Brighton all uniformity is eschewed, or unattended to.

> "The sea, the sea, the open sea,
> The blue, the fresh, the ever free,"—

this is the great attraction; and, in the face of the broad expanse of ocean, the non-uniformity of the broadways and buildings of Brighton is forgotten.

The architecture of Brighton is not of a very high character. On and leading off the King's-road and the Marine Parade, are squares and buildings, and crescents, presenting a very prepossessing appearance, large, lofty, and well lighted; but look where you will in Brighton, right or left, due east or west, north and south, you are confronted with plaster, plaster, eternal and unredeeming plaster. Perhaps it is more the result of misfortune than fault that Brighton has developed little or nothing of stone in its street architecture. The old brick fronts that still exist without plaster coating in the town, have a more warm and genial look, and they harmonise better with one's feelings than the sickly glaze of endless and monotonous plaster.

It is not our purpose to describe the public buildings of Brighton. Its Pavilion has been painted, and photographed, and caricatured, a thousand times, and is likely to undergo the same operation again and again. In origin it was the offspring of luxurious extravagance, and wanton and epicurean eccentricity. In design it was an anomaly, and it is so still; but the notions of both architect and king harmonised, as did also their taste in this respect. Whether we call it a pagoda or a pavilion it matters but little. Its onion-bodied cupolas or domes or its turnip-root minarets can neither add a grace to architecture nor warm into life one healthy idea of improved taste. It has outgrown its uses,—it is tabooed as a home for royalty; but though no longer the home of kings or regents, it contributes to the commonweal by affording useful accommodation to public institutions and public committees. In its new character, say we, let the Pagoda live so long as the public cause is served.

In speaking of the Pavilion, we may note that within its rooms the Brighton and Sussex Natural History Society have their quarters, and within the building also is the Brighton and Sussex Museum. There is a very good and varied collection of minerals and fossils here; petrefactions in stone and chalk, of fish, mollusca, and bird and animal remains—some indigenous to Sussex. The collection of stuffed birds is also pretty fair, and there are old coins, medals, and other varied castings, British and foreign.

The sanitary department is meagre and poor, and there are many things which find a local habitation here which ought to be at once ejected. There are several articles in the cases which have more the character of an advertisement for their donors and makers than that of sanitary samples of what good and bad articles are.

We are glad to see that the Brighton Society of Arts, which meets in one of the Pavilion wings, is giving facilities for the furtherance of the art-education of mechanics. The system they have adopted is capable of a wider extension, and of a more constant attention in its prosecution.

Brighton, which justly boasts of a splendid esplanade, can boast of no public park. How is this? While less noted places through the kingdom are providing parks for its people, Brighton rests on its oars at the beach. In England, Ireland, and Scotland, merchants and landlords, and members of Parliament, are moving in the good cause. Mr. Baxter gave Dundee a free park; and a few days since in Ballymena, Ireland, Sir Shafto Adair presented several acres for a free people's park. There is, indeed, a piece of private property with some villas around it which might have been secured for Brighton, but we hear it is at present down for building purposes. This park is called the Queen's Park, but there is nothing very queenly or graceful in the way in which its walks or paths are kept. Ground can be had for a public park in Brighton if its public board desire to move in the matter. Let the Brighton Corporation remember that open spaces mean health, and the health of a town bids fair for its permanent prosperity. It is considered by some that the construction of a harbour for shipping at Brighton or near it would be destructive to its visiting interest, and would have the effect of scaring visitors away, who would not care to come in contact on the esplanades with a rough sailor or sea-faring community. Perhaps there is some degree of truth in all this. Still, we believe that a little more shipping interest than what is comprised in a few fishing-smacks or coal-brigs below the town would be a benefit to the place. With the shipping interest come capital, wealth, and consequent industry and enterprise.

We now get back to our starting-point; and it is for the purpose of showing that if Brighton in the future is contented to depend upon her visitors, her people and inhabitants will find they rest upon a very unstable foundation,—a foundation that will give way in course of time. It may be soon, it may be remote; but the day is certain to come. The only way to secure Brighton against future failure in this respect is for her wealthy citizens, or her enterprising ones, to originate, establish, and develop some local permanent trade and manufacture as a mainstay in hard days, should they arrive.

Corporations or municipal institutions are local parliaments, and they should be utilised for the service of the inhabitants of the different towns where they exist.

We throw out these few hints with the best good wishes for the future prosperity of the town. Brighton has many good and useful institutions. It is highly favoured as a watering-place, and its hotels and churches and house property are increasing in number. Schools, colleges, hospitals, prisons, and workhouses, however, do not constitute all the grand practical or grand ideal of a prosperous town. Labour and employment, trade and manufacture, are required, and a good quota of a permanent working population; a fair share of growers and producers, and fewer reapers. Under the ægis of these things, towns must grow to wealth, stand firmly through occasional storms, and prosper, always independent of any adventitious aid. In conclusion, we wish to add that our observations on Brighton have a twofold character, and they are not alone intended for those whose interest is altogether wrapped up in the town, but for outsiders, here, there, and everywhere throughout the kingdom. If Brighton should be benefited, as we hope it may be, by these passing remarks, the local interest and the national one will be served together.

ARCHITECTURAL OUTLINE.

PURSUING this topic beyond the mere generalities of character of which we lately spoke,* as belonging to such an aspect of architectural design, the subject, if strictly viewed, opens out into several distinct and separately important branches of artistic study. Some of these will obviously come under such heads as the adaptation of outline to locality—its adaptation to purpose—to scale—to material.

The first-named of these relations,—of form to locality,—contains in itself many points which must very materially influence architectural design; since, putting out of sight for the time the other considerations of purpose, &c., a building, otherwise correct in character, may fail in effect through oversight in this respect alone. Among the first points for thought under this section of the subject must ever be those of urban or rural situation; these again dividing themselves under the specialities of wooded or open, hilly or flat country; and closed or spacious, high or low-built town sites. Without pretending to discuss fully all these distinctions, we may glance at some of them, as we deem they should weigh with one designing to satisfy them; and taking the first,—a wooded rural site,—how should this be dealt with by an architect desirous and capable of treating his work as an artist?

It may, we think, be taken as an axiom in our art that its productions should pronounce themselves as artificial by a measure of contrast with their surroundings of natural objects, while, however, harmonising, not clashing, with the latter.

The general forms projected against the sky by a mass of wood or forest are for the most part rounded and undulating; most compact and uniform in what may be considered as a *wooded* country, and more separated and grouped where the greater scale of its parts gives it the character of *forest*.

The masses of shadow and light in both will be broad, though varied, as perhaps in no description of scenery so much as in that which is wooded do the charms of richness and diversity combine so wonderfully with those of breadth and depth of effect.

Of all painters Claude Lorraine perhaps gives most evidence of entering into the full feeling of this class of scenery, which, even without the aid of very bold, mountainous, or rocky features, comprises in its broad masses, rich undulating outlines, and deep tone of colour, many of the elements of the truly grand in landscape; something perhaps analogous to the effect of a broad, rolling expanse of dark green sea, such as Claude himself depicted in some of his noblest works.

We remember, years ago, standing high above the middle reach of Windermere, with the woods of Calgarth, Storrs, and Rayrigg, on the eastern bank, and those above Belle Grange and the Ferry, to the west, bathed in the hazy glow of a summer afternoon, long before a steamer's paddle had disturbed the placid mirror of that fair water, or a railway-whistle been heard within many leagues of Bowness, and we call to mind the profound impression of a great artist's truth to nature which led us to remark to a no less interested companion how like it was to Claude, and how it proved the fidelity of his pictures to natural effect, and the power of that expanse of purple-green in his middle distances, which scarcely another painter besides has ventured so to dwell upon.

Few scenes in England can equal this for such an illustration; and let us ask what are the architectural accessories which would fitly unite their forms with those which give the outlines of the grades of near, middle, and farther distance, in this instance blending into a picture of surpassing rural and sylvan beauty?

For one answer to our question we may turn to Claude Lorraine himself; for how could his pictures of such subjects produce the intense impression of unity and harmony of effect which emphatically attaches to them, unless the architectural objects which enter into his compositions were of the very kind best suited to combine in effect with their natural features?

These architectural accessories we find to be generally of a massive and simple form, mostly square in outline, though sometimes circular *on plan*, for the most part of castellated character, and, where not so, still having much of the solidity and simplicity which belong to such structures, as is the case with many of the Italian conventual buildings. The result is a style of form which contrasts agreeably with those prevailing in woodland scenery, and thus marking man's work where occurring among nature's, and at the same time a breadth of surface and of shadow harmonising with those of the masses of wood or forest through which the artificial forms break. To apply this to our immediate subject, we see how it points to the character which should mark, for instance, a church tower or lofty mansion in the midst of such scenery. Here all littleness of parts or fritter of detail would jar with the prevailing breadth of natural effect; and we may, not so infrequently as we might wish, prove this negatively by the mistaken styles sometimes adopted in such scenery for both ecclesiastical and secular buildings. It is often very difficult, we admit, for an architect to convince his clients of the value of plain design, even when they desire inexpensive buildings; there is a hankering after display, after a good show for the money spent, which stands in the way of simplicity of treatment; and we fear that it is sometimes too much the case that the designer, too, especially if young in practice, is tempted to show what he can do when a good opportunity offers, rather than to exercise that due reticence of hand which is often the very soul of art, in dealing with peculiar sites.

The want also of critical knowledge among those to whose lot it falls to make choice of an architect, or of a style, for some public building stands too often in the way of this discriminating exercise of our art. A case lately came within our knowledge where a most worthy clergyman about to build an additional church in his parish undertook to save the committee who acted with him any trouble in choosing an architect by visiting several of the churches lately built in his part of the country, and deciding on the point from what he should thus see. Without mentioning more than one of his comparisons, it is enough to say that he recommended for this church the architect of one which he greatly preferred to another in a parish near it, the first being a poor and weak, though over-laboured, imitation of one by the architect of the second, which was simple, massive, and impressive,—

* See p. 180, *ante*.

qualities eminently wanting in that preferred, and whose *outline*, in a very prominent position, fails utterly in respect of repose and dignity, or in harmony with the natural features of its site. Our friend's new church, it is but fair to say, promises much better than that which influenced his choice of an artist. Many an old country church tower comes to mind illustrating to memory the harmony, with contrast, which may exist between such scenery as we have been considering and well-adapted architecture, and not a few spires, but these all simple in their parts, and massive in their proportions even when moderate in scale; and such must ever be the qualities sought by an architect who would plant in such scenes a work of "art-building" undiscording with the *genius loci*.

Our reference to Claude applying thus chiefly to buildings in hilly or undulating wooded landscapes, we can scarcely leave this part of our subject without a word or two on such as are placed in *flat* woodland scenery. The general outline of the trees clothing a plain follows, of course, in a great degree that of the surface they spring from, and thus much less of variety and *vertical* form is found here in the natural features, and more scope is given for direct contrast with the nearly horizontal landscape skyline. Hence in such scenery forms more lofty and taper than in hilly landscape will produce appropriate effect; and it is in this kind of country that our English church spires prove most effective, and of an angle and proportion finer and sharper than would produce an equal impression among more varied natural features.

When, however, trees of the fir tribe (other than the Scotch and Italian varieties) prevail, such forms will lose their power, and the broad square tower prove much more conducive to picturesque effect.

Some of the latter, of extreme simplicity, but of good scale and grey with age, are among the most powerful accessories we know to this quiet but charming style of landscape; form, colour, and association all combining to give them value.

To pass from country to town, let us consider for a little what points as to outline should guide an architect in designing a lofty building for an urban site, spacious as to openings, but abounding in features of considerable height.

Experience shows that in town scenery, at least where the climate occasions much use of artificial heating, great irregularity and diversity of sky-line are sure to exist, and unfortunately often combined with much of weakness and inelegance, if not ugliness, of form; for rare indeed are the instances of really solid and artist-like design in chimneys, suggestive though such features be to an accomplished architect.

Contrast with this mixed outline, by carefully graduated and distinctly marked form, should be a primary aim in such circumstances: the breaks of line not frequent, but all decisive, and care being taken to avoid in the ornamental or sculptural accessories such shapes as might approach any prevalent type of form among the familiar and undignified vertical excrescences in the neighbourhood. Breadth fully proportioned to height should be aimed at in such a situation where, perhaps, from several points complete views of the whole height of the building could be obtained, a point of less importance, where, as in crowded localities among narrow streets, this can seldom be the case, and that part of the building rising above the general mass, alone likely to impress its outline strongly on the eye. Careful study of detail is also here imperative, as, while conducing to give the general character of form relieved against the background of sky, it is certain also to be often subject to close examination, the inclination always existing where a building of importance reveals itself fully from such a distance as affords a good general view, to approach it gradually till generality loses itself in detail. As regards the terminal forms of structures such and so placed as those now under consideration, it will be found that much of their success will depend on definiteness and decision of outline rather than on any high degree of elaboration in their parts, careful though, as above remarked, the study of those parts, however simple, must be. A well-considered combination of curved and straight lines, where the style admits of it, will generally surpass in effect any form composed wholly of straight lines, and this because in almost every case this will afford the best measured degree of contrast with the forms generally prevailing in such town sites as we are supposing. Where the style of architecture excludes any large application of curved lines, a massive squareness will generally prove most effective; and as illustrations of each of the above classes of form, we may instance as pre-eminent the cupola of St. Paul's, London, and the centre tower of York Minster. Of course, the grand scale of these examples removes them from the class of ordinary design; but the principles which they depend upon are common to all scales of building,—with this reservation, that with *diminution* of scale an *increased* proportional degree of terminal solidity should be sought, or the result may be that of flimsy weakness, such as was alluded to in a former paper on this subject, as marking some late tower designs in the provinces. At the same time a more finished—we do not say a more studied—style of detail should be adopted in the upper parts of the structure, thus by smallness of scale brought nearer to the eye.

One of the stateliest examples extant of simple form on a grand scale rising among town masses of ordinary buildings is presented by the tower of the church of St. Rembault, at Mechlin, most beautifully depicted by David Roberts for the illustrated edition of Lord Lytton's "Pilgrims of the Rhine," and also in Coney's well-known etchings. It is remarkable that this tower, like that of York Minster, and others of very imposing appearance, has the bases of pinnacles at the parapet without their shafts, giving the idea—whether correctly or not can scarcely now be known—of their having been intended, but omitted from the completed design with the apparent object of preserving squareness and simplicity of outline, which certainly in these examples produces a noble and powerful effect.

Of town spires, those seem most effective which, with considerable massiveness of proportion, have their decoration confined in a great measure to the point of junction with the tower, as is the case with St. Mary's, Oxford. One celebrated steeple, that of St. Nicholas, Newcastle-on-Tyne, has always appeared to us weak in its impression, save on the direct square elevation; its effect on the diagonal having to our eyes the defect we have before alluded to, of deficiency of mass in the lantern and spirelet as compared with the tower seen diagonally.

The great Somersetshire towers, as that of Taunton and others, as also the cognate example of Wrexham, present fine instances of appropriate urban features, and in most of them the bold treatment of their parapets and pinnacles is conducive both to loftiness of aspect and grace of terminal outline without weakness.

Wrexham Tower, though in some of its details late almost to debasement, is an especially fine example of bold proportion and massive design, and few towns in Great Britain can boast of a finer and more appropriate central object; the spire of a lately-built church, designed apparently for contrast, of a very fine angle, groups strikingly with the old tower in distant views of the town, but, on a nearer approach, especially when viewed in comparative isolation, seems too attenuated for dignity, and in its very marked simplicity in respect of detail lacks something of the force derived from clustering decorative features at the base of a spire, bringing it also somewhat more into harmony with, though not imitating, the varied and broken character of the general town skyline around it.

A critical comparison of various examples with a close scrutiny of the mental impressions they produce and their sources, fixed in the memory by careful sketching (an exercise which no number of photographs or engravings can supersede in value) will lead to much of knowledge and quick perception of what is appropriate or the contrary; and no less will such study convince of the fact we have before sought to impress, of the great scope for variety of treatment which exists for works in this class of design, notwithstanding the simplicity of the main elements entering into their composition.

Having touched, though slightly, on a few parts of our subject, such as seemed calculated to convey correct impressions of the principles of criticism involved, we may hereafter enter into a brief examination of some of the rather more detailed points of treatment affecting this important province of architectural design.

The Water-Colour Societies.—The Society of Painters in Water Colours and the Institute of Painters in Water Colours will both open their exhibitions to the public on Monday next; the private view taking place this Saturday.

THE ARCHITECT AT THE HOUSES OF PARLIAMENT.

THE correspondence between the First Commissioner of Works and Mr. E. M. Barry "respecting his duties as architect of the New Palace of Westminster," as moved for by Mr. Cowper Temple, has been published. We print a portion of the architect's last letter, which led the First Commissioner to take legal opinion as to the right of the Crown to ask for all the contract plans and drawings of the Houses of Parliament:—

"I have ascertained that the professional custom of American architects in such cases agrees with our own, and that the rules of the American Institute of Architects declare that 'drawings, as instruments of service, are the property of the architect.' I have received numerous communications from architects and others to the same effect. I have also been informed by members of my family that they will feel aggrieved if I surrender that which they consider was left in my hands as a sacred trust, and the nature and tenor of all this which I have referred to, combined with my own feelings on the subject, place an insuperable barrier in the way of my handing over my inheritance to the First Commissioner of her Majesty's Works. I am, however, most anxious not to offer any impediment to his views, and I shall be happy to show all my drawings, &c., to the Director of Works, and to make tracings for his use of any of them of which he may require copies. For so doing I will make no professional charge, merely asking the First Commissioner to defray the actual and necessary cost of making such tracings or copies. Moreover, though I cannot admit the right of the First Commissioner to give me directions respecting my own property, I am willing to give to him, without any charge, originals or tracings of all drawings made in my own office, during my engagement, which have been signed as contract drawings, and referred to as such, and I sincerely trust that these proposals will put an end to a misunderstanding which I greatly regret, which I am not conscious of having done anything to bring about, and to the continuation of which I am anxious not to contribute."

The proposition seems most fair. There is an entire misunderstanding abroad as to architects' plans. Mr. Ayrton is reported to have said, as we mentioned last week,—"It was correct that certain architects had resolved that they were entitled to keep plans which they had prepared for other people who had paid for them." We have pointed out on many occasions, without reference, of course, to this case, that an architect is paid not for his drawings, but for producing a building. The drawings are his tools, his means for producing that result; and, whether numerous or few, whether made with ink on paper or with chalk on a deal board, do not regulate his charge. There is no more reason that the architect should give up his drawings to his employer at the close of the work than that the carpenter and mason should leave behind them their centres, templets, and drawing-boards, and it never is done. A plan of the drains or a section showing the flues may be and often is made for the owner, sometimes with and sometimes without extra charge; but as a principle the drawings belong to the architect, unless, indeed, there should be any special arrangements to modify that principle. We do not desire to see Mr. Barry commence a legal fight singlehanded with the Government, for whom law is cheap. The whole profession is concerned, and ought to make common cause to prevent the possible establishment of an unjust and injurious precedent. We sincerely hope, however, that the legal advisers of the department may take such a view of the question as may prevent what would certainly be a discreditable collision.

At a meeting of the Manchester Society of Architects, held on the 4th inst., it was resolved:—

"That the Manchester Society of Architects, being satisfied of the correctness of the views as to the ownership of architects' drawings set forth in the Rules as to professional practice drawn up by the Royal Institute of British Architects, desires to assure Mr. Barry that he will have their cordial support in resisting the demand of the First Commissioner of her Majesty's Works to deliver up to him the drawings prepared by his late father and himself, in their capacity of architects to the Houses of Parliament."

We understand that the Society also expressed their willingness to take up the suggestion made in our last, and join in a general subscription, to fight the question on public grounds.

SIR,—Having just read the correspondence between the First Commissioner of Works and Mr. Edward Barry, it appears to me a case of extreme hardship.

During an experience of thirty years and more on some of the largest buildings in England, I cannot call to mind a solitary instance of an architect surrendering his working drawings to his client; and to my mind it becomes imperative that such a demand, now made for the first time

should, in the interests of the profession, be resisted to the utmost.

To fight this question, which affects every architect in the kingdom, single-handed, against one of the most powerful Governments of modern times, would be a most unequal contest. Every associated body of architects should, therefore, be up and doing, and aid in furnishing the sinews of war by forming a defence fund, to which I, for one, would readily subscribe.

Let the Institute of British Architects at once appoint a treasurer, and there will be no lack of contributors to aid Mr. Barry in his defence.

A SURVEYOR.

METROPOLIS BUILDINGS AND MANAGEMENT BILL.

THE new "Bill to consolidate and amend the Building Acts relating to the metropolis; the Formation of Streets and of Sewers and Drains in the Metropolis [not very clearly expressed this, by the way], and for other purposes relating thereto," consists of 132 clauses, and 17 schedules, printed on 69 pages. It was brought in by Sir W. Tite, Mr. Bentinck, and Mr. Bowring, and is to come into operation, if so accepted, on the 30th of September next. The definition of a building not given in the present Act, stands thus:—

"'Building' includes every erection comprising a cubical space defined by walls, piers, posts, or other structures, and a roof or other covering, whether such erection is wholly enclosed or not, and whether it is fixed on permanent foundations or not, and of whatever materials it is constructed, and for whatever purpose it is used, or constructed, or adapted (but so that this interpretation be not construed so as to exclude from the application of the term building as used in this Act any erection that would have been determined to be a building according to the true construction of this Act if this interpretation had not been inserted in this Act."

The fees to be paid to district surveyors are not stated, but are to be the subject of bye-laws.

When a building has been taken down or destroyed to the extent of one half its cubical contents, the rebuilding is to be deemed as now the erecting of a new building, but the difference of opinion which prevails as to what constitutes its cubical contents is not dealt with.

By Clause 45,—

"A building in a street may, with the permission of the Board, given by them after considering any objection made by any of the owners of each adjoining building or ground, be brought forward to any extent, provided that no part thereof extends beyond a line drawn at an angle of forty-five degrees with the front wall or boundary of the adjoining building or ground; and the decision of the Board shall be final and binding on all parties and those claiming under them, as well in respect of easements of light and air as in all other respects."

As to public buildings, the Board takes much larger powers than heretofore. By clause 70,—

"A building shall not be used as a public building until the superintending architect has certified his approval thereof in relation to the matters referred to in the tenth schedule."

These matters are:—

"1. Width of lobbies, corridors, passages, landings, and stairs.
2. Freedom thereof from inconvenient barriers, and steps of narrow tread or curve.
3. Construction thereof with fire-resisting materials, carried by supports of fire-resisting materials.
4. Strength and security of railings and balustrades.
5. Width of openings for doors for public entrance or access and egress, and method of opening same.
6. Means of ventilation.
7. Provision for water supply by constant pressure or otherwise.
8. Provision for extinction of fire."

By Clause 99, the district surveyor, if he find a building in an eminently dangerous state, is himself to cause it to be shored up and hoarded in.

115. By order of Council, one of the police magistrates may have the exclusive execution of the duties to be performed by a magistrate under this Act confided to him.

126. A builder who executes work not in conformity with the Act is not entitled to recover payment.

As to foundations, the present requirement, that "the footing of every wall shall rest on the solid ground or on concrete," remains, and is not sufficient for security. A thin layer of concrete meets the legal requirement, and if on loose or unequally solid ground, will not ensure stability.

Party fence-walls exceeding 7 ft. in height are brought under supervision.

Amongst the exemptions we find,—

"Greenhouses, plant-houses, orchard-houses, summer-houses, poultry-houses, and aviaries, used exclusively for such purposes, standing detached, and not less than 10 ft. from any other buildings, not being heated otherwise than with hot water, and the fire-places, if any, being detached, with no flues of any kind within the houses or buildings."

"Water-closets and privies not exceeding in area 25 ft., and not exceeding in height 7 ft. 6 in. measured from the level of the ground to the under side of the eaves or roof-plate, and built on separate foundations and external to the buildings to which they belong, and having no internal communication.

Buildings not exceeding in area 50 ft., and not exceeding in height 7 ft. 6 in. measured from the level of the ground to the under-side of the eaves or roof-plate, and distant at least 10 ft. from any other building, and from any street, and not having therein any stove, flue, fire-place, hot-air or hot-water pipe, or other apparatus for warming or ventilating the same."

These exemptions are very objectionable, and would fill the back yards of suburban districts with dangerous wooden structures.

We shall have opportunities to look further to the provisions of the new Bill.

The ugly coinage "storey," plural "storeys," is, we are sorry to see, adopted throughout the document.

THE LATE MR. PATERSON, OF NEW ZEALAND.

WE have to record the death in New Zealand of Mr. Thomas Paterson, C.E. He was the son of a Leith merchant, and was born about the year 1832. He received his education at the High School, Edinburgh. He was articled when young to Messrs. Grainger & Miller, in the railway branch of engineering, and at the dissolution of the partnership, Mr. Paterson remained with Mr. Miller, and finally became managing assistant to Messrs. Blyth, who succeeded to Messrs. Miller's business.

In 1863, the Otago Government required the services of an engineer, to whom they guaranteed a two years' engagement, and a salary of 1,000*l.*, with expenses out and home again. Mr. Paterson obtained the berth by his testimonials, without any competition. He went out by the Suez route, in 1863, and was first appointed as road engineer for the greater part of his engagement time. He carried out many important and successful works. He surveyed and prepared Parliamentary plans for the Dunedin and Clutha railway, and for the Southland government he supervised the completion of the Bluff and Invercargill railway. He also prepared specifications for the re-construction of the Oreti line. Mr. Paterson drew up some able and careful reports on the Lyttelton tunnel, and on railway works in general in the colony.

At the period of his death he was engaged in the preparation of plans for the Rangitata Bridge, and as late as November last he had written to the Gladstone Board of Works that he had completed his design, and to the effect that, if a special meeting were called, he was in readiness to submit his plans, and make arrangements for the prosecution of the work.

He met his death, along with others, by the upsetting of the Dunedin mail-coach, in the Kakanui river.

Mr. Paterson's loss is severely felt in the colony. He was considered to have no equal in his own peculiar line in New Zealand. The deceased gentleman was unmarried, and was not known to have any relatives in the colony. In business matters he was considered upright beyond suspicion, and he was generally respected by all who knew him, or had dealings with him professionally or otherwise.

MR. PAGE'S SCHEME FOR A CHANNEL TUNNEL.

MR. THOMAS PAGE, C.E., has read a paper to the Society of Arts on his plan for a submarine tunnel across the British Channel.

He proposes to sink, between Dover or the South Foreland and Cape Gris-nez (17¾ nautical miles), eight conical wrought iron shafts, the longest about the height of Westminster Abbey towers; these shafts to be two miles apart, and consisting of an inner and an outer casing, the space between to be filled in with concrete after they are sunk and fixed or imbedded, and embanked also round with concrete to a height of 30 ft. on a base of 45 ft. all round. A network of moored chain cables would also help to secure them. Lighthouses would be placed on the tops of these shafts, at a height of 180 ft. above low-water mark.

"The shafts being in place, the bed of the sea would be brought to a fair surface by the operation of divers, who would be enabled to work without pressure on their lungs or their bodies; but into the particulars of this system (said Mr. Page) I do not wish to enter, as it is a special arrangement for such purposes of operating in deep water.

The next operation is that of sinking and bedding on the bed of the Channel, the tubes or construction for the railway. These may be for a single line or a double line. I will refer to the double line at present, and then describe a tube, the joint of which is patented by Mr. Williams, of Liverpool, by means of which the tube, moving on circular joints, can take an elastic position, and all the junctions can be made above the surface of the water, while the remainder of the tube is bedded in the sea.

The space between the shafts being divided into lengths, say of a quarter of a mile each, and heavy iron frames fixed in the bed of the Channel by the divers, the lengths of tubular sections which I would propose to submerge at one time are ¼ mile, 1,320 ft., a little more than the length of Waterloo Bridge. Eight of these lengths being sunk, and covered, complete the distance of two miles, and if a sufficient power and a sufficient number of operators were provided to commence from each shaft, the whole between two shafts would be done in half the time; and it is equally certain also that nine times the power and operators would complete the whole distance between Dover and Cape Gris-nez in the same time as would be required for joining two shafts.

The gigantic nature of the work and the magnitude of its details require corresponding means of execution, both in the steamships and other vessels, for placing the shafts in position, and for embedding the lengths of tube in their proper places in the bed of the Channel, as well as for all the operations for filling the spaces between the outer and inner rings of the shafts with concrete, in forming the banks of concrete round the shafts, and in covering with concrete the submerged tubes immediately they are placed in position. It is by an excess of power and means, in steamships and other vessels, in operators, and in materials for forming concrete, that the progress and completion of the work can be accomplished with rapidity and economy. Thus to cover a length of tubular section a quarter of a mile long, in two hours of the tide, would require 1,500 men; to fill the space between the rings of each conical shaft would require 500 men for two hours' work; and to form the bank of concrete round each shaft would require 350 men for the same time.

The cost seems to have been estimated at 8,000,000*l.*; or rather Mr. Page's plan was devised on an understanding with Mr. Newman, of the firm of Freshfield & Newman, that if he could stake his professional reputation on a plan that could be completed for 8,000,000*l.*, there would be no difficulty in providing the funds for its execution.

In the discussion which followed the reading of the paper, opinions were expressed *pro* and *con.* as to the practicability of the scheme. Mr. Brassey was amongst the speakers. He said that so far as he had been able to understand the project, it was one of such a gigantic and exceptional character as he had never before heard propounded. No engineer had ever attempted anything of the kind, and he very much doubted whether it would succeed; his impression was that it would not. He did not think it was possible to sink the tube, as was proposed, to the depth of some 200 ft. by any means yet known; and to attempt to do a thing so gigantic without greater experience would be a very hazardous experiment, to say the least of it. He agreed with Mr. Bateman (who had previously spoken) that it was impossible for miners to work at a depth of 200 ft. Therefore, with no experience to guide them, he thought it was a bold matter to attempt to execute such a project, and no wise man would attempt it.

Mr. Page said Mr. Brassey's objection as to divers working 200 ft. below the sea, without undue pressure upon their lungs and bodies, was very easily answered. Supposing the room in which they then were was at the bottom of the sea, and the walls were carried up above high water, would any one dispute that they could send out a diver from that room into the sea, passing through a sort of valve-cupboard into the sea, and give him only the atmospheric pressure, with perhaps a pound or so more. He had devised a dress for this purpose, by which all pressure was removed from the body. That being explained, all the difficulty about divers operating in deep water was removed. As to want of experience, all great engineering feats had been carried out without previous experience.

THE TRADES MOVEMENT.

Manchester.—Some months ago the painters of Manchester gave notice that on the 1st of April they would cease work unless an advance of 1d. an hour was given by their employers, along with a reduction in the hours of labour of three hours and a half per week. The men and their employers each agreed to select six of their number to form a committee of arbitration, to lay the whole subject before the Mayor of Manchester, who was appointed umpire. His worship has been hearing both parties, and at the close he said, it appeared from the admissions on both sides, that every four years there was a proportionate rise in the wages paid to the men, and he thought that, under the circumstances, the masters should pay the 7d. per hour, and accede to the demand for a reduction of three hours and a half per week. This was, in fact, giving the men an extra ½d. per hour, with the reduction

demanded in the hours of labour. Mr. Harwood, one of the principal employers in the trade in Manchester, in proposing a vote of thanks to the mayor, stated that it would be a great loss to the masters to give the advance at the present time, but it was preferable to coming into collision with the men, and creating misunderstanding and contention. He hoped that the men would, by increased diligence and attention to their work, in some respect qualify the great loss which they must inevitably sustain.

Motherwell (Glasgow).—A large number of labourers in the employment of Mr. Smith Brown, contractor, have turned out on strike for an advance of wages. The men allege that although other branches in connexion with the trade have received an advance, they have obtained none; hence the dispute. The strike at present is only partial.

Stirling.—The operative masons in Stirling have struck work, in consequence of the employers having refused to give an advance of ½d. per hour per day of nine hours. The strike still continues, and upwards of 100 masons, with a considerably greater number of labourers, are out of employment. The masters have resolved to assist each other as far as possible, and, by the aid of their apprentices, are endeavouring to push forward the work upon such buildings as are most urgently required.

Perth.—A meeting of the master masons has been held, and it has been unanimously resolved not to comply with the demand of the operatives for the additional ½d. per hour. A good number of men are coming from the country districts and obtaining work at the present rate of wages, —viz., 5½d. per hour. The men connected with the Masons' Association continue to hold out. Seventy-seven have found employment in other places, but thirty-two are still idle in the town.

Coatbridge.—The joiners of Coatbridge and neighbourhood have lately evinced considerable dissatisfaction since the commencement of the strike at Glasgow, and every effort has been made by them not only to support their city brethren, but to obtain the terms for which they are agitating. Weekly meetings have been held to consider the question, and it has been decided that, unless the masters agree to the terms proposed by the Glasgow men on strike, they shall also turn out. Accordingly, no agreement having been come to, the men have ceased working.

Fatal Trade Dispute in Bohemia. — The Austrian journals give some imperfect details of a lamentable collision between the Imperial troops and a body of workmen on strike. It appears that the trade differences in Northern Bohemia have lately resulted in the now ordinary form of a strike on the part of the discontented workmen. On the 31st of March the artisans employed at several manufactories at Reichemberg, having ceased to work, proceeded in a body to some establishments at Swarow, with the object of compelling a cessation of labour in that town. On their arrival they found the principal manufactory occupied by the troops, and a conflict ensued, which, unhappily, terminated in loss of life. It is stated that the workmen on arriving proceeded to insult the soldiers and to pelt them with stones. The latter after a time became exasperated, and fired upon the crowd. The result was five men were killed and twenty-five or thirty were more or less seriously wounded, whereupon the workmen dispersed; threatening, however, to return in greater numbers and better prepared to exact vengeance. One soldier was killed and another seriously wounded by stones. Great agitation prevails throughout the northern part of Bohemia, and all the manufactories of Swarow have been closed, while reinforcements of troops are being sent from Prague.

THE GREATNESS OF GREAT MEN.

RECENTLY an excellent lecture on this subject was delivered, in Wakefield, by Mr. Walter Smith, the head-master of the Leeds, Bradford, and Wakefield Schools of Art. In the course of his remarks he said he considered that in all great men there were these three features,—love of work, unfailing courage, and perseverance. Had some men not been the greatest workers the world would never have known them as great men. Mr. Smith, in answering the question "What is the secret of the success of great men?" said:—"The secret of great men is that there is no secret at all, and this is a secret which, though proclaimed upon the housetops before multitudes of hearers, will always be believed to be a secret, and for no better reason than that it is the easiest and most plausible way of explaining the difference that we see to exist between ourselves and those we acknowledge to be great. If we would fairly and honestly take to the acknowledgment that whilst we have slept great men have worked, whilst we have been self-indulgent and prone to luxury, they have been self-denying and inured to hardships, we should lose something in the good opinion we have of ourselves, but we should gain a great deal in self-knowledge, and dispel a mystery that should be no mystery at all. There seem to be common elements of character in all great men, almost the identical basis of character in the one as in the other, the different vocations explaining any minor differences that are to be found in them. Thus I find precisely the same features in the character of Michelangelo and the Duke of Wellington, two men living three centuries apart, in different countries, one a great artist and the other a great warrior. In them, as in every instance I have yet studied, the distinguishing feature is an intense love of work, work of the kind that fell to the lot of each to do. Another feature is indomitable courage, and the last is a never-dying perseverance. Though I have carefully studied the histories of many of the greatest men, in order, if I could, to discover the source of their greatness, I have never yet come upon one great life that has lacked these three features,—love of work, unfailing courage, and perseverance.

And this leads me to express the opinion that the only reliable sign or indication of genius is eagerness for and love of work as a basis; and whether this genius will ever become developed to maturity will depend greatly upon the other two features, courage and perseverance; though, of course, something depends upon health. Another feature of great men was, that failure did not discourage them. If they sat down with tearful eyes and lamentations, surrounded by their mistakes, and overwhelmed by them, they would never rise over them. Greatness persevered and overcame, whilst littleness lost heart and failed." As an illustration of perseverance the lecturer instanced the case of George Stephenson, who succeeded, in the face of apparently insurmountable obstacles, in laying a railway over Chat Moss, between Manchester and Liverpool. That which at first sight was deemed impossible to achieve was afterwards declared the strongest, and safest, and cheapest part of the line. Other men would have abandoned the project, but George Stephenson was a great man, and he did not. The lecturer conceived that in one single injunction, "Whatsoever thy hand findeth to do, do it with thy might," lay the elements of success. "It is not," said he, "the nature of your work, nor the importance, socially or pecuniarily, of your trade or profession that will give you the opportunity or means of living a great or noble life; for there are models in every calling, however important, and nobles in every occupation, however insignificant. The man dignifies or degrades the office, the office does neither to the man. There is absolutely no employment which may not be made the means of arriving at success in life; there is none which cannot be degraded into failure. The only stipulation is, that your hands shall have found the work to do, and that it shall be done with your might. Not with your inclinations only, nor with your faltering hands and timid hearts, but with might; and might means strength of hand and strength of heart, skill and courage combined in one strong word."

LECTURE BY SIR H. JAMES ON THE GREAT PYRAMID.

A LECTURE on the Great Pyramid of Egypt has been delivered before the members of the Hartley Institution, at Southampton, by Col. Sir Henry James, R.E., director-general of the Ordnance Survey. Sir Henry entered at some length into the details of measurement of the Great Pyramid, pointing out its perfect exactness, and said that many enthusiastic gentlemen imagined these beautiful proportions must have been the result of superhuman labour, following out this idea in a manner which excited the admiration of those who were their followers, and the ridicule of those who were not; among the latter of whom he included himself. In passing, the lecturer exhibited an exact representation of what he said was the most interesting piece of wood in her Majesty's dominions—the wooden cubit measure found in Egypt, and now deposited in the British Museum, and which was more than 3,200 years old. Having remarked that he had a copy of this measure sent out to Egypt to Sergeant-Major Macdonald, with instructions to measure the pyramid, and stated one or two of the results thereof, Sir Henry went on to say that the side of the square base of the pyramid was equal in length to 760 English feet, and his experience was that people had a very imperfect idea—a difficulty of realising such dimensions. The stone used for the facing was of a better class than that which formed the inner portion of the building, and to give an idea of the recklessness of cost, so to speak, and the tremendous indifference to any amount of labour which characterised the old Egyptian kings, the lecturer said they, at enormous pains, had large stones brought from the opposite side of the Nile, and placed in their present positions. They were, too, very clever as architects; for instance, in the king's chamber inside the pyramid there were stones 30 ft. long, placed one over another: these stones were not found in Lower Egypt at all; but although some were 90 tons in weight, they were brought in vessels 500 miles down the Nile, carried across great causeways, and then placed in the pyramid 100 ft. above the level of the ground. Then, again, as to the finish, this Syenite stone was one of the very hardest known, and yet it had been polished and built in to form a casing for the king's chamber with such an exact skill and so high a finish, that the finest piece of tissue paper could not be put between the joints, and this in a place built 4,000 years ago for no other purpose than to hold the body of one man. If there was one thing which more than another he admired in the construction of these pyramids it was the extraordinary manner in which the builders introduced the principle of counterbalancing, by which, he believed, the stones were raised to their positions. By aid of a model, the handiwork of Corporal Goodwin, R.E., who worked it on the platform, Sir Henry explained his theory upon this point. In conclusion, he said that the assertion of some that the pyramids were built only as a standard of measure was an insult to the understanding.

THE NINE HOURS MOVEMENT.

BY A WORKMAN.

SIR,—Another agitation in the building trade is the last ominous announcement which has been the round of the papers. Among the many strange things in existence there is none more startling than the continual agitation of the builders' workmen: contentment to them is unknown,—and in season and out of season the brains of the leaders are scheming agitations. It matters not what is the state of trade. When brisk they want a rise of wages; if slack, a reduction in the hours of labour.

According to the reports, the new movement is making great progress. Meetings are held, at which every one agrees, and the rules for the guidance are unanimously passed as the apex of legislative wisdom. It is a pity that any doubts or jars as to the benefits of the movement should disturb such rare harmony. Nevertheless, I think it is the workmen's duty to weigh their unanimous proceedings in the scale of common sense, and, if found wanting, to expose the fallacies which have misled a portion of their fellow-workmen. Before doing it, I may state that I have spoken to many workmen about the movement, and have not found any in favour of it. The labourers are tooth and nail against it; and the others say, that as the building trade is better paid, has more privileges, and work less hours than other trades, it is the wisest course to let well alone.

The movement in 1859 for a reduction in the hours of labour led to one of the greatest strikes on record. The revivers of that movement have changed their tactics, and state they are willing to drop the hour's pay, and take nine hours' pay for nine hours' work, thereby assuming that no opposition will this time be offered by the employers, as the object is to provide for the surplus hands in the trade, and the leaders think they are entitled to much praise for their philanthropic efforts. But it so happens that there is something further in the shape of a code of working rules which gives the key to the movement, and from them we learn that the reduction of the hours of labour is the pretence,—higher wages, more privileges, the object; and it is evident that the masters must, in the inte-

rest of the public, resist, or this movement will, like many others, end, if not at once opposed by masters and workmen, in a ruinous strike. As such is the case, it behoves employers and workmen who object to the movement, and to these continual agitations in the trade, to arouse themselves and form, not an anti-strike or a free-labour society, but a common-sense society, whose object would be to expose the fallacies and inconsistent considerings of the men who now pretend to lead and regulate the building trade. The reduction of the hours of labour is a favourite theme with trade-unionists; they have an idea they can, by reducing the hours of labour, regulate the supply to the demand; they appear to think that work is a fixed quantity, and that workmen are an exact number. But, unfortunately for their theory, London is the metropolis of Great Britain, and workmen from all parts flock to it; and, further, it is the ambition of a large number of apprentices, to become London workmen. They have heard of it as a place where enormous wages are to be earned, and thus it is that in London there is, and always will be, a large number of unemployed workmen. And this demand to raise wages, that are already much higher than the wages in other trades, will end disastrously to all concerned, in the first place, by the absorption of workmen whose trades are closely connected; and in the end they will be compelled to accept lower terms and less privileges than they previously possessed.

The rule relating to working hours states "that nine hours are to be reckoned as the working time; all over that to be called overtime, and to be paid time and half, and double time." Before discussing the consequences of that, I might ask, who now objects to overtime? I have worked with unionists, and I never heard any object. We know that in theory they pretend to object, but in practice they take to it kindly without a protest, and therefore this nine-hour movement is a dishonest movement, because it is in its essence a scheme to raise wages. It is, or ought to be, well known that a large part of the builders' work in London consists of alterations and repairs, and it is that branch of the trade which the rule as to overtime would most affect, and its influence would have a deadening effect in relation to the various trading establishments in the metropolis. In shops and offices, every inch of space is economised, and all sorts of schemes are devised to make the most of it; and alterations and repairs are a serious consideration, as it is a partial stoppage of business, and the tradesman is always glad to see the backs of the builder's workmen; and no doubt in the first-class businesses the inconvenience of having workmen about is almost as great a consideration as the cost. Overtime is then a matter of necessity, and if they are to be taxed from 50 to 75 per cent. for it, the chances are they will prefer to go on in their old way rather than submit to the workmen's demands. Other cases might be cited which would more illustrate this short-time movement, but sufficient on this point has been said to show that, in relation to alterations and repairs, it would inflict loss on the public and seriously affect the workmen's earnings.

In London there is a large number of small builders who employ from two to twenty workmen, and these in most cases have not more shop-room than they require to carry on their usual business. It sometimes happens that they are unusually busy; every bench is full, and they require the men to work overtime; but if they are to pay a heavy tax for it, it is evident that it would prevent any increase or enlargement of their business; and thus the rule would keep small tradesmen in a fixed position, and give an advantage to those who happened to have more shop-room than they actually required. As some builders are more fortunate than others,—or, in other words, there is a surplus of master builders,—it would be well for the leaders of the movement to make it more absurd than it at present is, to take into their consideration the case of the unemployed masters, as there are at present many of them who have no stowage, and yet want more room, whilst there are others with plenty of shop-room and no work. According to our leaders' ideas this state of things ought not to exist. I hope, sir, you will allow, in the interest of the workmen, this question to be discussed in the *Builder*, as, in my opinion, that is what is required to bring the workmen to take a common-sense and practical view of the unwise proceedings of the so-called working-class leaders.

JACK PLANE.

THE POOR OF EDINBURGH.

SIR,—You have frequently, in the pages of the *Builder*, called attention to the subject of the destitution existing in the metropolis, and it has occurred to me to bring under your notice the "Edinburgh Association for Improving the Condition of the Poor."

The Association has been in existence for two years, and after having had many obstacles to contend with, is now in good working order, and is doing much good. This city is favourable for such an experiment. The poor are more concentrated in certain districts than is generally the case, and these are not far removed from the residences of the better classes. There are here a number of retired military and professional men, with time hanging on their hands, to whom the work of visiting, &c., is not burdensome, but the visitors are recruited from all of the well-to-do classes who have any time to spare; and some of the most energetic and useful of them belong to the class of skilled artisans. The Association is particularly anxious to get at the children: where possible they are sent to school, and free dinners have been given to many of them (all are invited). Members of the Association attend these dinner-parties, and a register is kept of the guests, and their cases inquired into. By this means we get at the root of the evil.

By your making public this matter you may induce others to follow a good example. I believe that applications have been made to the central committee from other cities for information as to the working of the system.

W. G. SHIELLS.

WORCESTER DIOCESAN ARCHITECTURAL SOCIETY.

THE annual meeting of this society has been held in the Council-room of the Museum of the Natural History Society, Foregate-street, Worcester; present,—Earl Beauchamp (in the chair), Rev. R. Cattley, Rev. G. S. Munn, Hon. and Rev. H. Douglas, Rev. T. G. Curtler, Rev. H. J. Vernon (Eckington), Rev. H. G. Faussett, Rev. J. F. Green, Rev. R. H. Eyre Davies, Mr. E. Lees, Mr. J. Severn Walker, and Mr. G. J. A. Walker.

The Secretary (Mr. Severn Walker) read the annual report, which was adopted; after which some discussion took place as to the right and duty of the society to criticise the various public buildings erected in the locality during the past year.

The Rev. M. E. C. Walcott was elected an honorary member of the society, and the office bearers were re-elected.

THE ARCHITECT'S DEPARTMENT, BOARD OF WORKS.

THE preparation of the New Buildings Bill, to which we have referred in our present issue, as well as that of various previous drafts, devolved on Mr. Walter Newall, the principal clerk in the Architect's Department. After 26 years' service, partly with the Referees of the 1844 Act, and since then under the present Board from its foundation, Mr. Newall finds himself with a salary of 300*l.* a year, attained at the beginning of 1868 by the final increment of 10*l.* under the first-class scale, and we do not wonder to hear that he is now seeking to induce the Board to consider his position. We have reason to know that his duties are such as have always required knowledge and judgment, and have long called for nightwork, week by week, in the preparation of returns and reports which could not be attended to during office hours. A public servant such as this should not be allowed to end his days at 300*l.* a year.

THE GREAT HALL, ALLEYN'S COLLEGE, DULWICH.

THIS handsome apartment forms the central feature of the block of buildings just completed, as the new College at Dulwich, of which a general view, plan, and particulars were given in a previous volume of the *Builder*.* The whole of those buildings are now complete, and have been partially in the occupation of the school, where 250 to 330 boys are at present assembled. The building, when fully occupied, has accommodation for 800, and situated as it is close to London, and in the midst of a very populous neighbourhood, which is ever on the increase, there can be no doubt that the full number of scholars will be at once eager to enter so soon as the arrangements of the trustees permit. At present, as we have said, they do not propose to take more than 300 boys.

The hall is on the principal floor of the building, and is approached on each side from the ground floor by spacious staircases communicating with the play cloisters of the boys, and which connect the north and south wings of the building with the central block. Its length is 92 ft., its width 43 ft., and its height above 50 ft. There is a raised dais at the eastern end, which will be available, we presume, for those speeches and dramatic recitations which have so agreeably marked the examination prize-days of Alleyn's College during the last few years. The great ribs of the roof are supported on pillars of red Devonshire marble, highly polished, with richly-carved stone capitals, and standing on pedestals of terra-cotta work in cream colour and light green ware of very finished and beautiful manufacture, from the works of Mr. Blashfield, of Stamford. A panelled oak dado runs all round the hall between these pedestals, while the panels between the pillars are to be gradually filled with the recorded names of scholars of Alleyn's College who shall have attained distinction in their after-studies and their future lives. The great doors each side of the hall leading to the staircase, of carved oak, are worthy of observation. The hall is lighted by a large mullioned window at each end, as seen in our engraving, and which is filled with glass, relieved by a stained glass bordering; while the tracery contains the armorial bearings of the College. These windows have been executed by Mr. Moore, of the Eckford Glass Works, Clerkenwell, and the border and other coloured parts are formed from Stamford coloured glass, the ingenious process for doing which has been patented by Mr. Moore. The window jambs, mullions, and tracery are all of terra-cotta, enriched with modelled carving from Mr. Blashfield's manufactory above mentioned. The roof of the hall is entirely in deal. Its design is similar in style to the roofs of some of the great churches and basilicas of North Italy—that is, a wagon form; sometimes found with a single curvature from wall to wall, and sometimes, as at the great church of St. Fermo, at Verona, of several stages of curvature,—an idea which has been carried out at Dulwich. These roofs in Italy, however, are never divided into bays, as at Dulwich, and the result is a heaviness of effect which is here relieved by the circular principals springing from hammer beams supported on the marble pillars before referred to. The spandrels of the springers under the hammer-beams are filled with the armorial bearings of the College, duly emblazoned in colour, and the effect of the whole is enhanced by the simple expedient of staining its principal lines of mouldings, but leaving the natural colour of the deal in the carved or enriched features; the whole then being varnished. From the centre of the roof rises a louvre, for about 30 ft. above the ridge of the roof, intended for ventilation, which, being treated externally in several stages, and terminating with a crocketed spire, forms an important and graceful feature of the exterior.

This hall is intended to be used for dining the masters and those boys of the College who may wish to avail themselves of the arrangements about to be made by the trustees for this purpose, and with a view to which a complete range of kitchens, &c., is provided on the lower floor, with a double lift thence to the service-room on one side of the hall. It is calculated that about 400 can easily dine at the same time, though it is doubtful whether so many scholars will wish to do so, as, of course, many live with their relatives in close proximity to the College.

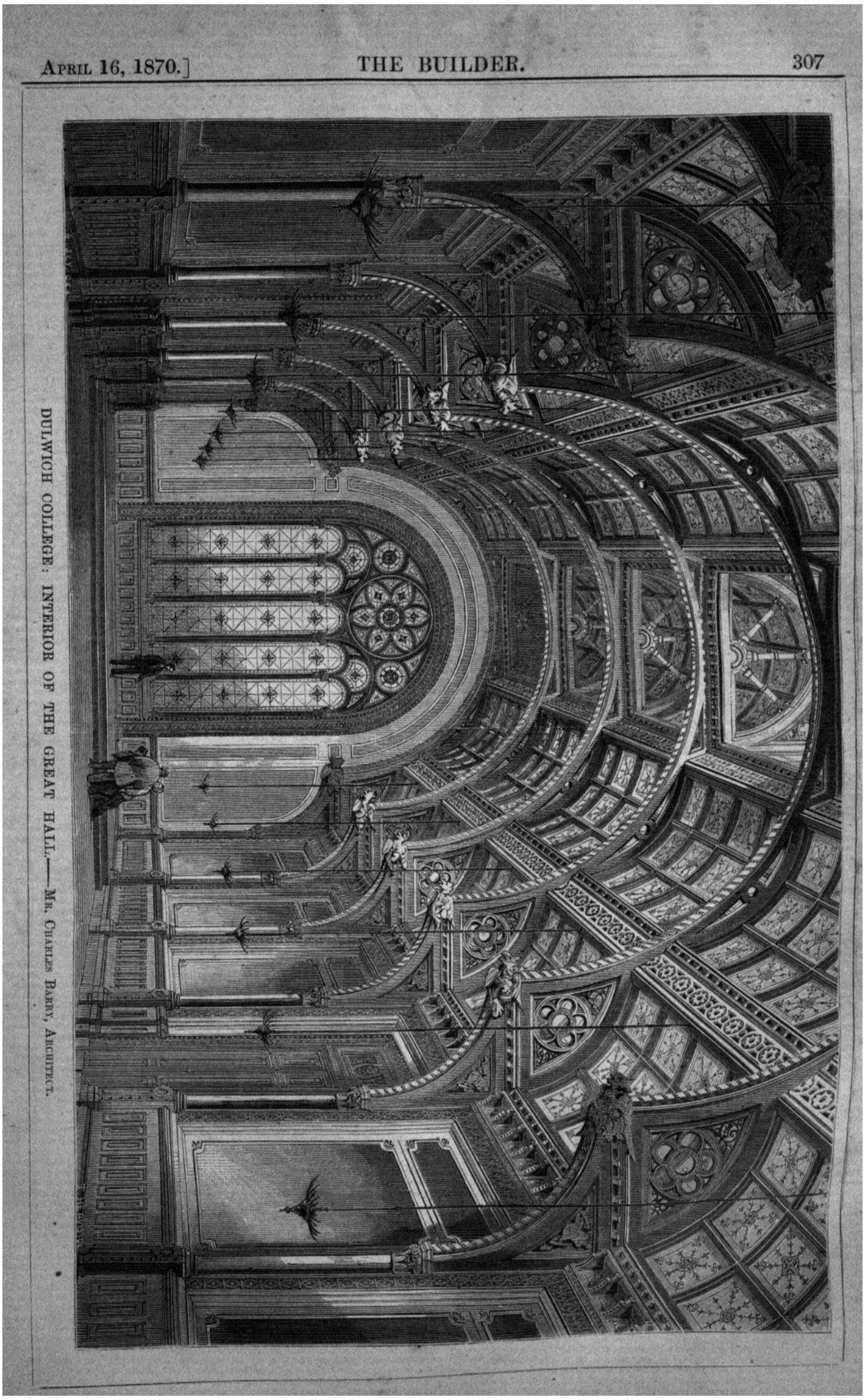
On the annual prize days, 700 to 800 spectators will readily be accommodated, a fact which will encourage and reward the exertions which doubtless will be made to vie on these occasions with Westminster, Eton, Harrow, Rugby, and Marlborough.

We should not omit that the walls and roof have been tastefully decorated in colour and arabesques, by Mr. Schmidt, of Kingsdown-road, Islington, under the immediate direction of the architect to the governors, Mr. Charles Barry, from whose designs the whole pile of buildings has been carried out.

* Vol. xxvi., pp. 521, 531.

MR. CHARLES B. VIGNOLES, F.R.S., *President of the Institution of Civil Engineers.*

ANCIENT TEMPLE AT EUYUK.



DULWICH COLLEGE: INTERIOR OF THE GREAT HALL.—Mr. Charles Barry, Architect.

RUINOUS BUILDINGS AND THE BUILDING ACT.

With reference to certain proceedings taken by the Commissioners of Sewers against Mr. De Keyser, of the Royal Hotel, Chatham-place, in respect of certain works required to be done to his premises, to render the same safe, as reported in our pages,* Mr. Power has forwarded to us a communication, of which we give the pith:—

"On the 3rd of January last, a policeman (and not 'or somebody else,' as in your report) called here, and left word with my clerk that the back wall of No. 10, Chatham-place, was in a dangerous condition. This information I forwarded to the commissioners in the usual way, upon forms supplied by themselves for th s purpose, and on the 11th of January I received an order from them, to survey and report upon the state of the house in question. On the 17th of the same month I reported that, in my opinion, a portion of the back wall was in a dangerous state, and recommended certain steps to be taken to secure the same.

Mr. De Keyser, who is one of the commissioners, seems to have felt himself aggrieved, and complained, through his surveyor, Mr. Gruning, to the commissioners of my conduct in this matter.

My certificate and report upon the above bear date January 17th; and Mr. De Keyser's complaint, through his surveyor, is dated February 14th, nearly one month after my report had been sent to the commissioners; and when I state that, up to the former date, Mr. De Keyser was an entire stranger to me, it will be seen how groundless is the insinuation that in these proceedings I was actuated by 'malicious feelings:' quite the contrary. Mr. De Keyser solicited an interview with me on January 28th, relative to this same certificate, and I then found him to be a very courteous and, as I thought, honourable gentleman; indeed, we parted on very friendly terms.

With regard to the question put to me in cross-examination, as to whether the wall would stand for 'one, two, ten, or twenty years,' I declined to answer, on the ground that I had nothing to do with the future; the point I had to decide, regard being had to the safety of the public, was, 'Is or is not this wall now dangerous?' and my opinion is most decidedly that it is dangerous, and ought to be properly secured.

All practical men who are conversant with defective old work know that a structure may stand for an indefinite period, and may, on the other hand, give way at any moment.

The statement that a 'fillet of cement had been run round the house' is simply untrue. The only cement I could discover was a few small bands, about 2 in. or 3 in. long, placed at the top of the cracked brickwork. This was, however, at some considerable distance above the crack to which I more particularly referred; and when I say that it is some 12 ft. long, and varying from ⅛ in. to ¼ in. wide, running obliquely from north to south, and subject to all the vibration consequent upon the roadway next the house being used for the purpose of conveying heavy loads on to the new Embankment, I think you will agree that as the subject was brought before me officially I could not, in the interests of the public, have expressed a different opinion than the one contained in my certificate without a grave dereliction of duty, and, in the event of an accident taking place, a judicial censure.

One of the witnesses for the defendant admitted in cross-examination that the wall was to a certain extent dangerous. . . . .

Edward Power, District Surveyor."

COMMUNICATION WITH FRANCE.

Sir,—I have read with much interest your article on the above subject, and although I take quite a different view as to what ought to be done, I trust that you will give insertion to the following remarks, as it must be the desire of us all to arrive at the truth and at the really best means of effecting the object desired. . . . . .

It is now more than five years since I first brought forward my project of a tunnel under the Channel, and before doing so I was guided entirely by the experience I obtained, first in the mining districts of Northumberland, where, for ten years of my practice as a civil engineer, I obtained much useful information applicable to the subject in question. The Radcliffe Colliery, near Amble, is but a few hundred yards from the sea shore. The depth of the shaft is 75 fathoms, that is, about 65 fathoms below the level of the sea, and there is not the slightest drop of sea-water. I opened out an extensive quarry close on to the sea shore, and which supplied the greater part of the stone used in the construction of two breakwaters, one of them nearly half a mile in length; and although there was only a thin wall of natural rock left as a barrier to the sea, the excavations within the quarry were carried in some places as much as 40 ft. below tide-level, and the infiltration was only sufficient to make the water in the quarry slightly brackish, so that a ten-horse engine, working a 10-in. pump eighteen hours out of the twenty-four, was sufficient to keep the quarry dry. Then, as the Wealden formation contains much thinner beds of clay than are met with in the coal measures, there would not, in my opinion, be the slightest chance of meeting with sea water at the depth I propose to construct the tunnel under the Channel between Dungeness and Cape Grisnez; and, to show the retentive nature of the soil at Dungeness, there are two or three large ponds of fresh water almost close to the shore; the bottoms of these ponds are below tide-level, and I believe that not the slightest drop of salt water would be met with in sinking a shaft there, and it is quite certain that spring water could be overcome by pumping. Then, as regards the project for constructing the tunnel through the chalk, the five years' experience I had as civil engineer to the Admiralty at Bermuda, where very extensive quarries have been opened out, in which from 400 to 500 men daily worked, the whole of the island where the works were situated consisted of lime-stone; some portions hard, others soft, approaching to chalk, but more compact; nevertheless, it was quite impossible to get down more than a few feet below tide-level by any amount of pumping brought to bear; and in consequence of this difficulty a graving-dock could not be constructed in the ordinary way, which led the Lords of the Admiralty to determine upon the floating-dock sent out last year to Bermuda.

When I took up the subject no project of the kind was then before the public. I was free to select what I conceived to be the best line for the tunnel. My experience in Northumberland convinced me that if strata could be found in any way resembling the coal measures there, the tunnel could be made. My experience in Bermuda convinced me that any formation resembling chalk should be avoided; and having ascertained that Dungeness is the very centre of the Wealden, and that it extends under the Channel in the direction of Cape Grisnez, I feel convinced that the tunnel might be constructed there with the greatest certainty, and at much less expense and in much less time than generally supposed. Now, in comparing this line with the line of tunnel more recently proposed to pass through the chalk from Dover and the South Foreland to Cape Blanc-nez it will be seen that the latter requires 29½ miles of continuous tunnelling, whilst the Dungeness line will require 28½ miles: assuming both to have equal gradients at the approaches, the South Foreland line would have only two shafts, the Dungeness line three—one on the shoal in mid-channel, which would not only more than double the facilities of constructing the work, but would give much better ventilation than could be obtained without a central shaft; and if it be desired to put down other temporary shafts in order to expedite the works, the clay strata of the Dungeness line will admit of it without difficulty; but it would be impossible to put down shafts in the tideway along the line of the chalk.

There are a great number of other considerations in favour of Dungeness. It would be the nearest route between London and Paris. It would be the most central for joining the railways. The wealden formation would produce much useful material for the works. Several thousand acres of barren land might, by means of the spoil from the excavations of the tunne', and from other changes that would be effected by the railway, be brought to great value for building and other purposes; and I believe that if the work was once commenced, it could be carried on without the slightest interruption, and that I have in my estimate of cost and time allowed for every possible contingency. George Remington.

* See p. 270, *ante*.

NEWTON MARKET COMPETITION.

Sir,—True it is that I, the successful competitor in the above competition, am a son of one of the members of the Board, but what difference that makes in the design I cannot see. Does your correspondent mean to insinuate there was any unfairness used in arriving at the decision? If so, I simply challenge him to prove it.

An architect's *assistant* (not a *pupil*), until very lately a resident in Newton, thoroughly acquainted with the site, and the requirements of the place; and, moreover, having given the subject great attention for three or four years past (having made designs for improving the market for the former proprietor, before the property came into the hands of the Local Board), it may not seem very surprising that the first premium fell to my lot.

That my design is better suited than any other to the requirements of the town, I think may be inferred from the majority (8 to 3) through which I obtained the premium, and by its having passed two discussions in committee without the plan being materially altered. The elevations, which were kept very plain to save expense (neither the situation nor the instructions justifying expenditure in this particular), may of course be improved, if thought desirable by the Board, at a proportionate increase of cost. If the two other designs you name *did* obtain a larger share of favour with the public than those premiated (which, however, I greatly doubt), I can only attribute it to their highly-finished perspectives. There are, however, I am happy to say, gentlemen on the Board, "old birds" who are not to be "caught by such chaff." John Chudleigh.

THE ARCHITECTURAL EXHIBITION, CONDUIT-STREET.

We desire to point attention to an advertisement in our present Number announcing that the time for sending in drawings has been extended to the 20th inst. The private view is fixed to take place on the 7th of May. We have quite recently exhorted members of the profession to support the exhibition, and would ask them to look back to what we then said. Just now the committee have especial need of assistance.

BELFAST.

The Albert Memorial.—This memorial is not likely, it seems, to be inaugurated by royal hands, her Majesty the Queen having declined, through the Home Secretary, the invitation forwarded to her to visit Belfast, and the Prince and Princess of Wales cannot go to Belfast this year.

Workmen's Belfast and International Exhibition.—At a recent meeting of the Executive Committee in connexion with the exhibition, the secretary submitted the programme of arrangements for the local exhibition, and it was ordered to be printed and advertised, for public information, as soon as possible. The tender of Mr. Wm. Martin, for supplying refreshments to visitors to the Ulster Hall during the exhibition, was unanimously accepted. Some conversation then ensued on the best situation for the display of the fine arts contributed, and it was agreed that these should, as far as possible, be exhibited in the Minor Hall. The secretary reported that the erection of the shedding for the machinery was progressing satisfactorily. He also stated that he had received a considerable number of applications for space from local manufacturers.

New Church for Strabane.—A movement has been set on foot to erect a new Episcopal church at Strabane, the present edifice being old and badly adapted to meet the wants of the parishioners. 8,000*l.* is the sum named as the probable cost of the new church. The adjacent town of Omagh will shortly have a new church to replace the old and unsightly edifice in which the parishioners at present worship.

COMPETITIONS.

Eccles.—The following gentlemen have been invited to compete for the Roman Catholic Industrial School proposed to be erected on land already purchased at Eccles, near Manchester:—Mr. Young, Mr. Wm. Nicholson, Mr. Kirby, and Mr. Tijou.

INSTITUTE OF ARCHITECTS.

At the last meeting, the Chairman reported that the formal presentation of the Royal Gold Medal and the distribution of the Institute medals and prizes would take place on Monday, the 2nd May, 1870, immediately before the annual general meeting, when it was hoped that the President, Sir W. Tite, M.P., would take the chair. The attention of the meeting was called to some specimens of terra-cotta facing brick, exhibited by Mr. W. Davison, of Egton, York. These bricks, which when used in execution are said to be washed clean by every shower of rain, are supplied by Messrs. Davison & Co. at 4*l.* 4*s.* per 1,000.

SANITARY ASPECTS OF ARCHITECTURE IN GLASGOW.

A paper has been read before the architectural section of the Glasgow Philosophical Society, by Bailie Salmon, on "The Sanitary Aspects of Architecture, as exhibited in the City of Glasgow."

Public sentiment, he said, coinciding with their own he had no doubt, had condemned the present sanitary aspect of Glasgow architecture as unsatisfactory and unsound. Alluding to what ought to be the character of the dwelling prepared for the family of a working man, he said he thought they must abandon the plan of erecting tenements of four stories high for the housing of the working classes, on the simple but emphatic ground that they could not do so without overcrowding; and he believed this could only be properly accomplished by extending the area of the city. He was convinced, after forty years' close acquaintance and much experience in connexion with this subject, that if our citizens were to be protected from infectious poisons, moral and physical, it could only be by transferring them to districts where the arrangements of houses and streets, and the provisions for every sanitary want, would be such as to render the infliction of such wrongs impossible. Thinking over this question for many years, and still more so of late, he had come to the conclusion that four or five villages should be built on each side of the city, and as close to its boundaries as suitable ground could be obtained. Each village or suburb should be large enough to contain a population of 10,000 or 12,000, or about 50,000 in all, and to which could be transferred a portion of the 30,000 or 40,000 who, from railway and City Improvement operations, would be compelled to leave their present noxious and miserable dens. In these villages every variety of working-class houses could be provided, from the cottage of the foreman, or small master, with its three or four apartments, to the one apartment and bed-closet, for those to whom it might be suitable. A large proportion of dwellings should be restricted to one story; none should be permitted of more than three stories in height; and not more than 300 inhabitants should be allowed to each acre.

Mr. Salmon made some remarks on the buildings erected by the Corporation of London and by the Peabody Trustees, which afterwards led Sir S. Waterlow to write a letter to the president of the Sanitary Section of the Glasgow Philosophical Society, in which he says:—"I have now under my control and management more than 1,000 tenements, containing between 5,000 and 6,000 souls, all the blocks constructed on the same principle, with *external* staircases, and four tenements or houses on each floor or flat,

and varying from *four to seven* stories in height. The death-rate on the average would be less than 22 per thousand. Bailie Salmon cannot have made himself at all acquainted with the details of the subject when he speaks of the buildings erected by the Corporation of London and by the Peabody Trustees in the same category. If he had examined the principles of construction in each case he would have seen at a glance that they were entirely opposed to each other, the Corporation having adopted my plan of external staircases and perfect external separate ventilation to each tenement, while the Peabody Trustees have invariably followed the old plan of internal corridor, with the necessary consequence of internal ventilation and increased difficulty in the prevalence of the spread of epidemic disease. In my houses the tenements consist alternately of two rooms and a scullery, water-closet, &c., to each family; and averaging the family at five souls, the cubic area for each soul would be about 480 ft. Bailie Salmon's objection to six stories seems to me quite ridiculous, especially in the face of the fact that in my buildings the highest stories (even the seventh) are the most healthy, and let the best. Give me good and sufficient drainage, and a plentiful supply of water at the top of the houses, as we have in London, and then the higher the better the through ventilation and the more healthy the tenement. Suburban villages have been tried in the neighbourhood of London and have failed. Mr. M'Adam is quite right—the working people will not live in them; they prefer, and almost necessarily, their crowded localities, where work for themselves and their children is more readily obtained, and where their amusements are close at hand. Dr. Fergus is also right when he says that the great thing is to get rid of the foul air in houses. This can only be effectively accomplished by adopting the external staircase, and providing proper and sufficient drainage, well-trapped at basement, and with upcast ventilating pipe from lowest syphon. The working classes in Glasgow are housed much worse than in any city I have ever seen in Great Britain or on the Continent, and it behoves the more wealthy inhabitants to look to it ere great mischief arises."

CHURCH-BUILDING NEWS.

Westward Ho! near Bideford, Devon.—The new church of Holy Trinity for this increasing watering-place, has been opened by the Bishop of Exeter. It has been erected by the Rev. I. H. Gosset, vicar of Northam, and stands as a Chapel of Ease to that parish. It is built in the Early Pointed style, and in plan consists of a nave, 60 ft. by 20 ft.; chancel, 32 ft. by 18 ft.; chancel aisle, 19 ft. by 9 ft.; north and south aisles, 60 ft. by 9 ft.; organ chamber, 10 ft. by 9 ft.; vestry on north side of chancel, south porch, and western narthex, 20 ft. by 7 ft.; the height from nave floor to ridge of roof being 40 ft. Strength and solidity have been the aim of the architect. The external dressings are of Lundy Isle granite, except where Marwood and Forest-of-Dean stone have been used for contrast in colour. There is a bell turret, 18 ft. high, with two bells over the chancel arch. The dressings of the interior are of Bath stone, and the plaster is finished deep red. The nave roof is of deal, and that over the chancel pitch pine. The stone for facing all the plain masonry of the exterior was taken from the Kenwith Quarries. The floor of the chancel is laid with encaustic tiles, supplied by Mr. William Whitestone, of Coalville. The foundations rest on a bed of concrete, 4 ft. wide and 3 ft. deep, and in some cases 8 ft. below the surface. All the works have been completed by Mr. J. C. Tremear, builder, Bideford, from the plans and under the superintendence of the architect, Mr. W. C. Oliver, of Barnstaple. The carving was executed by Mr. H. Hems. The cost of the works will be about 1,700*l.*, exclusive of boundary walls, excavations, and fittings. The nave will seat about 400 persons.

Otterton, Devon.—Lady Rolle is rebuilding, at her own expense, the ancient parish church of St. Michael, Otterton. In taking down the chancel the workmen found a staircase leading originally, it is supposed, to the rood-loft. In the main the plan of the church has not been altered. The tower will still stand at the east end of the south aisle, but the chancel will be carried out farther eastward, so that it will project beyond the aisle, and a north aisle will be added to correspond with that on the south side. Greater length will also be given to the west-end, and thus the church will be made to accommodate 700 people. The style will be Early Geometrical, which will carry the work back in association with the only period when such irregularities occurred as the eccentric position of the old tower. The nave and the two aisles will be covered by separate span roofs springing from bold columns and arches, and the chancel, which may be regarded as an addition to the form of the old building, will be proportioned to the increased breadth and length of the structure. There will be south and north entrance porches, but no door at the west end. The north entrance will be reached by a flight of steps, which are rendered necessary by the fall of the land on that side. The old tower remains; at least, the lower part, having been rebuilt above the belfry windows, and surmounted by a parapet with quatrefoil piercings. The roofs will be tiled. The walls will be of Berryhead stone, the windows, and all external dressings, of Ham Hill, and the interior arches of Bath stone; while the walls internally will be lined with Beere stone, and the columns made of Plymouth marble. The roofs of nave and aisles will be of stained deal, and the chancel fittings of oak, while the area of the church will be furnished with open deal benches. The ancient font will be retained. The capitals of the polished marble columns will be of Caen stone, of large size, and finely carved, and the chancel steps will be of Plymouth marble, like the piers, while the floors will be paved with Maw's encaustic tiles of rich design. The architect is Mr. B. Ferrey, and the builder, Mr. Burridge, of Exmouth. The carving and sculptured work will be executed by Mr. Harry Hems, of Exeter. The total cost of the building will exceed 7,000*l.* Service will be held meanwhile in the adjoining schoolrooms, which, like the church, are the gift of Lady Rolle to the parish, and have been only recently finished from Mr. Ferrey's designs. Mr. Cloutman is the clerk of works.

Folkestone.—Considerable alterations to the Church of St. Peter will be proceeded with immediately after Easter. The principal works will consist of a new north aisle, the enlargement of north transept and sacristy, and the extension and improvement of the sanctuary, which will have an apsidal termination, with windows of stained glass, and be separated from the nave by a low screen wall. The present roof is to be raised bodily an extra height of 5 ft., and at the intersection of the roofs of the nave and transepts will be erected an oak octagonal *flèche* finished with a leaded circular spire. All the present benches are to be altered by reducing the height of seat and back, and the new seats will be low, movable light benches. Externally, the walls will be of Kentish Rag, with Box-ground stone dressings. The walls on the inside will be of red and blue bricks, and the columns and arches to the arcade, &c., will be of Caen stone. The work will be executed by Mr. Bowley, from the plans and under the direction of Mr. S. Slingsby Stallwood, of Folkestone, architect.

Derby.—The corner stone of St. Luke's Church, Derby, which is being erected as a special local memorial of the late bishop of the diocese, Bishop Lonsdale, has been laid. It is being built in a rapidly increasing suburb of Derby, on the new Uttoxeter road, called California. The plans were prepared by Messrs. Stevens & Robinson, of Derby, architects; and the contract was taken by Mr. J. Fryer, of the same place. The walls have been raised to the level of the ground-floor. The new church consists of a nave, which, with the porch at the west end, is 94 ft. 6 in. long, and 52 ft. 6 in. wide; a chancel, terminated by an octangular apse, 37 ft. by 31 ft.; two narrow side aisles to the nave, 3 ft. 6 in. wide in the clear; and a tower at the north-west angle, 21 ft. 6 in. square, and 120 ft. high to the top of the roof. Under the chancel, which is considerably above the level of the adjacent street, there will be a large room for vestry and other meetings, and over a chamber devoted to a heating apparatus, on the south side of the chancel, are vestries. The vestry is lighted with ten lancet windows, one on each face of the apse, and the others in the side walls. In the west end a rose-window will be placed, 14 ft. 6 in. in diameter. The walls and dressings are of stone, from Riggerlane quarries, at Little Eaton, near Derby. It is rock-faced on the exterior, and the interior in dressed ashlar. The roof, which will be of deal, stained and varnished, with circular trusses, will be covered with brown and blue Staffordshire tiles, and it is intended to pave the aisles with Minton's tiles. The interior of the church will be fitted with open deal seats, stained and varnished; and accommodation will be provided for 650. The whole of the seats will be free.

Hertford.—St. Andrew's Church has been consecrated. The style is Geometrical Pointed. The church consists of a nave, 78 ft. long, 25 ft. wide, and 47 ft. high, to the apex of the boarded vaulting, with aisles and transepts. The organ-chamber (12 ft. 6 in. by 16 ft. 6 in.), is on the north side of chancel, and the vestry, which is on the south side, is of the same dimensions. The total length of the church, including the old tower, is 122 ft. The width across the transepts is 75 ft. 6 in., and across the aisles, 49 ft. The area of the old church, exclusive of tower and porch, was 3,308 ft., including walls, and the area of the new church is 6,262 ft., or nearly double that of the old. The church is faced externally with knapped flints, random worked, the dressings being of Bath stone. The windows to the aisles (three in each bay) are cusped lancet lights. The clearstory windows are of two lights, with plate tracery. The transept ends are designed so as to form important features—the church being seen more in elevation than perspective. The transept rose-windows, which are filled with geometrical tracery, are 10 ft. 6 in. diameter, and below them there are two two-light windows. The roofs of the church are covered with red tiles, with ornamental cresting. The old tower has not been pulled down, the funds not justifying an attempt to rebuild it. Accommodation is provided for nearly 650 persons, including the choir and children. The cost of the church was 3,831*l.* The whole of the works have been executed from the designs of Mr. J. Johnson, of London, the architect, and the contract for pulling down and rebuilding the church was carried out by Messrs. Dove, Brothers, of London.

Datchworth (Hertford).—It having become necessary, in consequence of the unsafe condition of the tower of Datchworth, to remove and reconstruct the upper portion, a lofty spire has been erected. In addition to this the old and somewhat inconvenient pewing has been removed, as well as the gallery, and the interior of the church has been reseated, repaved, and restored, under the direction of the architect, Mr. A Blomfield. The total expense is said to be over 1,000*l.*, of which sum nearly 950*l.* have been raised.

DISSENTING CHURCH-BUILDING NEWS.

Sunderland. — Trinity United Presbyterian Church, Sunderland, has been inaugurated. The site is in Toward-road, facing the new park. The edifice is approached by a broad flight of steps, through a triple doorway, and owing to the fall of the land, almost perpendicularly towards the back, to the extent of upwards of 20 ft., a school-room of this height, and of proportionate length and breadth, has been obtained. The church is capable of accommodating 800 persons. In addition to the church and school-room, a sessions-house, vestry, and keeper's rooms, with conveniences, are attached. The building is designed in the Gothic style of architecture, and is built of stone throughout. The total cost will amount to about 4,000*l.* Mr. R. Allison, of Whitburn, was the builder, Mr. H. Andrews the clerk of the works, and Mr. T. Oliver was the architect.

Burslem.—The Wesleyan chapel at Burslem is to be considerably enlarged, with a view of providing proper accommodation for school children in the gallery during divine service, and additional sittings for the general congregation The present front of the building will be taken down, and the length of the chapel will be increased 16 ft., the new front being in the Corinthian style of architecture. There will be a porch, with new staircases and vestibules. The gallery over the new part will be used for the accommodation of the school children during service, and additional sittings will be added to the body of the chapel. The work is to be executed in Hollington and Grinshill stone, the shafts of the front windows being of Aberdeen granite. There will be new windows to the sides of the chapel, glazed with obscure glass with ornamental margins. Mr. John Stringer, of Sandbach, has contracted to do the work, from the designs of Mr. George Woodhouse, of Bolton. The total cost of the alterations will be about 3,000*l.* The corner stones of the new portion of the chapel have been laid.

Wakefield.—A Wesleyan chapel and school for the suburb of Belle Vue is to be erected, and, with this view, a premium was offered for the

best plan, and out of five sent in one forwarded by Mr. Watson, of this town, architect, has been selected. The chapel will be 40 ft. long by 31 ft. wide, and the schoolroom 31 ft. long by 15 ft. wide. The design is Gothic. The external facings will be red pressed bricks, relieved by white and blue bands and arches and stone dressings, the front gable to be coped with stone and have ornamented terminations and iron foliated finials. The roof is of moderate pitch, and will be covered with blue slates. Internally the fittings will be of red deal, and these also and the roof timbers will be stained and varnished. The division between the schoolroom and the chapel is so arranged that the two can be thrown together. The chapel will seat 210 adults, and the school accommodate 100 children. The cost of the building will be over 400*l*. The architect has already advertised for tenders for the various works. He has also been instructed to prepare a design for the chapel and schools at Eastmoor, which are to cost about 1,200*l*.

Shelf.—The New Independent Chapel at Buttershaw has been opened for divine service. The edifice stands in the midst of a large population, on the north side of the Halifax and Bradford turnpike-road, and a few hundred yards from the school-room in the direction of Buttershaw. The architecture is Gothic, and the plan consists of an elongated nave, with an apse for the organ at one end. The pews are open, and have sloped backs. There is a gallery over the entrance-door, and provision has been made for the erection of side galleries when required. The accommodation at present is sufficient for about 450 persons. A spirelet rises to a height of 90 feet from the front angle. The roof is open, the windows of tinted glass, and the vestibules and aisles are laid with mosaic tiles. The building stands in the centre of an area of ground containing 2,522 square yards, the cost of which was 252*l*. 4*s*., being 2*s*. per yard, and is enclosed by a fence-wall. The contractors were:—Mason, Mr. Thomas Lightowler, Buttershaw; joiner, Mr. John Patchett, Clayton Heights; glazier and painter, Mr. Henry Crowther, Shelf; slaters, Messrs. Hill & Nelson, Bradford; plumber, Mr. Samuel Dyson, Sowerby Bridge; ironwork, Mr. John Robinson, Stockton. Mr. J. Pritchett, Darlington, was the architect. The cost, including building and site, will be about 2,400*l*.

Nottingham.—The new Congregational chapel, St. Ann's Well-road, Nottingham, has been opened for divine service. The building is situated at one angle of the square formed by the junction of St. Ann's Well-road, Great Alfred-street, and Union-road. The style is Gothic, the materials being red brick, and stone dressings relieved with bands of blue bricks. On the front elevation are the two principal entrance-doorways, the heads of which are of moulded stone, pierced in cusped foliations. Between these entrances, which are approached by flights of steps, are two stone windows divided into two lights, and having cusped tracery in heads, and with moulded jambs and mullions. In the gables above these windows is a circular stone window with moulded tracery. Around the windows are arches of moulded and cut bricks, and moulded stone labels finished off with carved bosses. The front gable is surmounted with moulded stone coping and a cross of ornamental design. Between the side windows are brick buttresses, having weatherings of cut bricks. The interior of the chapel consists of a nave, with side-aisles, divided by an arcade of five bays, with pointed arches resting on iron columns, having moulded caps and bases. Above the arcade is a clearstory. At the east end is a circular stone window of foliated tracery, filled in with stained glass. The roof is lofty, all the timbers being visible, and, instead of being plastered, the ceiling is formed with beaded boarding, the whole being stained a dark tint. The gasfittings consist chiefly of rings encircling the capitals of the iron columns, with brackets at the pulpit end. The church is 63 ft. long by 40 ft. wide, providing accommodation for 500 persons; and underneath is an extensive school-room, with class and infant rooms, the floor of which is only 2 ft. 6 in. below the ground-level, so that the whole is well lighted from windows on both sides. The new edifice will cost 1,600*l*.

Hipperholme.—The corner-stone of the new Wesleyan chapel here has been laid. The site is immediately opposite the Whitehall Inn, the principal front being into the Brighouse and Denholme Gate turnpike-road. Messrs. R. Ives & Son, of Halifax, are the architects, and the chapel will be in the Geometric Gothic style. It will be built of Northowram wall-stones, with freestone dressings. The length will be 80 ft., the width 37 ft., and the height externally 50 ft., and there will be minister's and other vestries at the back. The interior will be divided into six bays. The roof will be an open one, with circular bindings, supported by stone corbels. One bay is treated as a transept, and the roof will be groined. There will be a gallery at the west end, over the entrance and vestibule, capable of accommodating 180 persons. The internal wood-work will be of yellow pine, stained and varnished, and on the ground-floor will be 298 sittings, making altogether a total of 478. The schools and class-rooms, to accommodate 150 scholars, will be constructed under the chapel at the east end. The principal entrance is to be at the west front, by a moulded doorway. On the side elevations there will be four bays, each having a two-light traceried window, the other bay being brought out to form a transept, having a five-light window. All the windows are to be glazed with quarry-glass, and the chapel will be lighted with gas, by coronæ, pending from the roof. The total cost will be 1,953*l*. The contractors are:—Masons, Messrs. Fletcher & Sharp, of Hipperholme; joiner, Mr. G. Townend, Halifax; plasterers, Messrs. J. Bancroft & Son, Halifax; and plumbers, Messrs. Firth & Son, Halifax; the total amount of the contracts being 1,556*l*. 19*s*. 6*d*. One-third of the cost of the chapel has been given by the trustees of the late Mr. Wm. Heap, of Halifax.

Birkenhead.—A new Primitive Methodist chapel has been built in Grange-lane, on land purchased from Sir William Jackson, bart., and in a central and suitable situation. The new chapel has been opened. It is a brick and stone building, built by Mr. W. Dickinson, Seacombe, from designs by Mr. John Wild, of Oldham, the architect. It is situated at the corner of Grange-lane and Horatio-street, opening into which are large school-rooms. The chapel will provide seat-room for 600 persons, and is the fifth place of worship belonging to the body in the Birkenhead circuit. The cost, including the land, will be about 3,000*l*.

East End (*Middlesex*).—The memorial stone of a Wesleyan new chapel has been laid here, by Sir F. Lycett. Mr. J. Willey is the architect, under whose superintendence the chapel has already been erected, by Messrs. T. Niblett & Son, of Hornsey Rise, builders. The cost is about 1,000*l*., and the building will seat about 250 persons: the school, which forms a transept to the chapel, will seat about eighty more. The building is in the Early English style.

PROVINCIAL NEWS.

Prestwich.—The new workhouse and hospital situate at the Cleveland, Crumpsall, cover some three acres of land, with about seventeen surrounding. The buildings and ground are estimated to cost 40,000*l*., or, it should be stated, the guardians of the union have sought borrowing powers for that amount. Mr. T. Worthington, Manchester, is the architect, and Messrs. R. Neild & Sons are the contractors. The building, which at present contains 128 inmates, but is calculated to accommodate 312, is situate in the immediate vicinity of the Manchester workhouse at Crumpsall, and was entered upon by the inmates in September last. Leaving the entrance lodge, almost immediately in front, and occupying the centre of the block, and so arranged as to command ready access to any portion of the house or hospital, are the apartments of the master and the matron. On the right of the rooms occupied by the master are the male wards, and to the left of those occupied by the matron the wards set apart for the female inmates. The first room along each corridor is devoted to a store-room for clothing and material for clothing, that worn by the female inmates being made upon the premises. Adjacent to this, and well lighted, ventilated, and warmed, is a large room termed "the day-room," for old paupers. From this point, the corridor is intercepted, and the visitor enters upon a distinct ward,—that set aside for the imbecile inmates, of whom there are twenty-six at present. On either side of the central building, from the master and matron's apartments, are distinct day-rooms, baths, and yards and offices for male and female imbeciles. Immediately above the wards are the dormitories, and on the ground floor a similar rule is observed. The imbecile dormitories are separated from the other rooms by doors, rendering each a distinct and independent ward. A similar observance is visible in the separation of the able-bodied paupers' apartments. At right angles to the main building, and connecting it with the premises in the rear, is the chapel, situate immediately over the general dining-hall. From this point,—the chapel occupying the centre of the whole block,—wash-houses, laundries, drying-rooms, and baking departments are ranged. Separated by a covered passage-way from the other buildings, the fever and hospital wards are erected in the rear of the buildings. Hospital accommodation is afforded in four separate wards for thirty-two patients in each. In constructing the new building, the Prestwich Board, according to the new legislative enactment, found it necessary to supply 1,200 cubic feet per inmate.

FROM VICTORIA.

Melbourne.—The foundation stone of St. Mary's Roman Catholic Church, at Williamstown, was laid about twelve years ago by Dr. Wilson, then Bishop of Tasmania. The works were for a short period pushed forward, but when the walls of the western end were a few feet above ground they were discontinued, and have ever since remained in that state. A few months back the Roman Catholics of that suburb determined to resume operations, and, the original plans not being forthcoming, called for competitive designs, incorporating the existing work for the completion. The one furnished by Mr. T. A. Kelly, of Elizabeth-street, architect, was selected. The plan includes a nave 24 ft. wide, and side aisles, giving a total internal width of 49 ft. by 100 ft. in length. A polygonal apse terminates the nave, while the "Ladie Chapel" and tower terminate the north and south aisles respectively. The tower is surmounted by an octagonal spire rising to an elevation of 110 ft. Internally an arcade of six bays of moulded arches, resting on cylindrical shafts with carved caps and moulded bases divides the nave from the aisles. The clearstory is pierced with foliated windows, two to each bay. The height from the floor line to the ridge of the roof is 40 ft. The principal entrance is at the west end, and consists of a projecting covered porch, having shafts, arch moulds, and dressings of freestone; similar porches, one at either side, give access to the aisles. A large wheel window set in a recessed bay, occupies the centre of the west gable, an ornamental cross surmounting the apex. The roofs will be open-timbered. The nave passages and porches will be laid with Maw's encaustic tiles. The main building has been constructed of bluestone, with fine axed dressings of the same material, while the tracery of the windows throughout will be in Geelong freestone. When completed, the church will afford accommodation for about 800 sittings, and the expenditure will be under 6,000*l*.

The new hall at the Criterion Hotel has been opened. It is nearly 69 ft. by 32 ft. in the clear, and 20 ft. from the line of the floor to the centre panel of the ceiling. The ornamentation of the hall is in the Greek style, the walls having panelled pilasters, with enriched caps and centre paterœ, surmounted by an enriched entablature, the frieze containing the honeysuckle and the husk of the order in relief. On the west side of the hall are six windows with enriched blockings and architraves, and the eastern wall has large mirrors to correspond. In the centre of the ceiling is a sunlight, 4 ft. in diameter, ornamented with Greek margins; and on either side are centres of flowers. In order to secure a thorough ventilation, the pilasters have flues at the back, and the paterœ are fitted with suitable gas brackets in case they should ever be needed. The architect for the work was Mr. Peter Matthews, of Collins-street; and the contractor Mr. George Freeman.

It is proposed to fill up the niche in the front of the Mechanics' Institution with a full-size statue of Shakspeare, chiselled out of some very choice freestone from the quarries in the Barrabool-hills. Mr. Brain, a Geelong sculptor, has undertaken the performance of the work, more for "the cause" than the profit. This artist is carving a group titled "Faith gazing on the Cross," in monumental marble, for Mr. Le Sure.

At a meeting, in October, of the Technological Commission, held in the Exhibition Building, the members present being Judge Bindon (chairman), Messrs. Rolfe, Thomas, & Blair, M.L.A.S., and Dr. Bleasdale, the chairman presented a report of his visit to the carpenters' and joiners' school for technical education. He stated that the committee of the school were progressing in

their arrangements for organising the school in an efficient manner. The school had only been opened on four nights, and there were twenty pupils present. The committee proposed that the course of education should be general, so as to [meet not only the special, but the general wants of the trade they represented. Preparatory classes were to be commenced. A class for geometry had been already formed, and classes for mechanical, architectural, figure, and other branches of drawing were about being formed, as was also a class for the making of models, &c. The committee expressed to him their desire for assistance from the Technological Commission, to enable them to purchase figures, models, and other necessary materials, and also stated their opinion that nothing would be more likely to advance industrial education than the delivery of lectures. On the motion of the chairman, the commission granted 5*l.* to the school. Mr. Rolfe then reported that he had visited the school of design at the Trades' Hall. There were 102 pupils present. 10*l.* was granted as a donation to the school, to enable them to purchase materials.

Melbourne derives a considerable part of its water-supply from a reservoir in the neighbourhood, named Yan Yean. A quick-sighted physician, who has brought the subject before the Medical Society of Victoria, has discovered that the whole drainage of a township, after creeping through a foul swamp, flows by three outlets into the main feeder of the reservoir.

The Jewish fraternity of Melbourne are about to erect almshouses for their poor, and have accepted a design for the erection of the same. Competitive designs were invited from the various architects, and about a dozen designs were sent in, when one with the motto "Charity" was accepted, the author being Mr. Geo. R. Johnson, of 46, Elizabeth-street. The design selected is in the Lombardic style of architecture. The buildings will form two sides of a quadrangle, fronting the St. Kilda-road and Union-street, with a synagogue on the angle. The whole is estimated to cost 5,000*l.* It is intended to build only a portion at present, and fence in the land, which will cost about 1,000*l.*

Beechworth.—The Post and Telegraph Office at Beechworth, situate at the corner of Camp and Ford streets, is erected in the modern Italian style of architecture, of brick, stuccoed, and on granite foundations. It contains on the ground floor, post-office, telegraph office, savings-bank, and money-order offices, postmaster's private office, battery-room, store, kitchen, and out-offices. The receiving and delivery windows are under an arcade 38 ft. in length fronting Camp-street. The clock tower, constructed of granite, has a three-faced dial. The roofing is of Bangor slate. The upper floor contains quarters for postmaster consisting of six rooms, passage, and terrace over the arcade. The whole is being erected in connexion with the Public Works Department by Mr. Nation, whose contract amounts to 3,687*l.* 10s., and was to be open to the public by the beginning of the new year. The *Illustrated Australian News* contains good engravings of this and three other new edifices on one of its recent pages.

Castlemaine.—The Castlemaine Hospital, in the Italian style of architecture, erected from designs by Mr. J. A. B. Koch, and built by Mr. Borland at a cost of 2,500*l.*, has been opened for public use. It is constructed of brick, on sandstone foundations, with granite plinth, and is approached by a double flight of granite steps. It stands on a piece of land granted by the Government, and will ultimately form the centre block when the entire structure is completed. On the ground floor is an entrance-hall, 9 ft. wide, extending from front to back, having on its right board-room, patients' waiting-room, consulting-room, and dispensary; and on its left, casualty-ward, with bath-room, lavatory, nurse-room, closet, and scullery. From the main hall a staircase leads to the upper wards. The basement, which consists of spacious dining-room and sleeping apartments for the servants, is reached by a separate staircase leading from the dispensary. All the apartments are well lighted and ventilated. The piece of land around the building affords space for recreation grounds, which are neatly laid out and ornamented with shrubs. The situation is pleasant, being at the north end of the town, facing the railway, the back garden having a frontage to Barker's Creek. The new portion has accommodation for fifty patients, and has all the latest improvements connected with hospitals.

Ballarat.—The Ballarat Water Supply Commission have decided to proceed with the erection of new offices at the corner of Grenville and Lewis Streets, opposite the new premises of the Gas Company. The building will be after a design by Mr. Bagge, the committee's engineer, and will consist of two stories, the estimated cost being something like 2,500*l.*——The foundation-stone of the new Town-hall, Ballarat, has been laid. The principal entrance to the municipal offices will be in the centre under the tower, which will stand right out to the front, so that the stone, which has just been laid, will also be the foundation-stone of the tower. This tower is to carry the Alfred memorial bells, which have already arrived at Ballarat. They have been cast by Messrs. Mears & Stainbank, of Whitechapel, as already noted in the *Builder*. The bells are valued at 1,180*l.* The present contract for the erection of the tower has been taken by Mr. William Cowland for 16,767*l.*

Books Received.

On Art Training. By JOHN G. CRACE. London: John Bumpus, Oxford-street.

UNDER this title Mr. Crace has published the address delivered by him at a meeting of Art Workmen, February 15th, to which we referred at the time. He begins with an art-workman as a lad, and shows what should and may be done for him by his parents, and what he should, and, if he please, may, do himself. We would willingly reprint half the excellent matter of which it consists, but think it better to recommend the purchase of the tract itself. We content ourselves with quoting a little story that Mr. Crace tells to show what may be done where there is a will. He is speaking of the advantages obtainable by travelling, and says,—

"And I think it quite possible for a young man who is careful to be able to do it. I knew a young fellow many years ago now, who scraped together the sum of 30*l.*, being determined to travel in Italy and see all the wonderful works of art there, and he went.

Of course he was obliged to use very strict economy.

He took conveyances now and then in the dull parts of the countries, but he mostly walked, and chose his routes through beautiful scenery as much as possible. Well, he went all over Italy, he saw Milan, Venice, Florence, Rome, Naples, Pompeii; he was three months absent. He made careful sketches of much that he saw; and, though he returned to England with only a few shillings in his pocket, he had riches in store, being wonderfully enlightened and improved by his knowledge of art.

This young man was a writer by trade; he taught *himself* to draw, and, by practice, he drew beautifully; he applied himself very diligently to work; he got on; he copied manuscript writing and illumination; he did artist work, especially in Mediæval style. He, in time, earned his five or six hundred a year, and supported his family in comfort and respectability. Poor fellow—he died last year, loved and respected by a large number of friends, among whom I truly class myself. His name was James West.

I think it is not useless to mention this little episode to you; for many a man, by abstaining from drink and by careful economy, may save up 30*l.*, and every man can learn to draw."

Notes on Sanitary Reform. By a Sanitarian. London: Simpkin, Marshall, & Co. Bristol: Kerslake & Co. 1870.

THIS very useful contribution to the great cause of sanitary reform has been re-issued in a revised form, with the name of the author, Mr. S. Sneade Brown, of Bristol. It has been well circulated, especially in Bristol. There is a discreditable freemasonry existing in some towns to suppress all efforts to throw light upon the real state of things, and it is against this evil spirit that the shilling pamphlet under notice has been chiefly directed. It is well adapted to strengthen the hands of sanitary reformers in such cases, and so to do good.

VARIORUM.

"Street's Indian and Colonial Mercantile Directory for 1870. Street, Cornhill."—The re-issue of this Directory shows that it is useful, and destined to live. To London and other merchants, traders, and to all interested in India and the colonies, it is indispensable, although, no doubt, there is much still to do in rendering it complete as a directory. The present issue is said to contain much additional information.——"The Bicycle: its Use and Action. By Charles Spencer. Warne & Co." The instructions given, and illustrated, in this little volume are, we dare say, correct, since they are given by a manufacturer of the article, who advertises his goods at the end.——Mr. J. N. Lockyer, in his third lecture on the "Sun," delivered at the Royal Institution on Saturday last, showed (according to *Nature*) an interesting experiment with a candle, which gives a good general idea of the solar phenomena as observed by his new method. As round the sun Mr. Lockyer can spectroscopically detect an ordinarily invisible hydrogen envelope which is rendered evident by bright lines only as contrasted with the nearly continuous spectrum given by the white light of the double surface of the sun, so also there is an ordinarily unnoticed envelope (of sodium vapour) round a common candle flame which gives a bright line spectrum as contrasted with the continuous spectrum of the flame itself. Mr. Lockyer also showed that some of the phenomena he has seen when watching a solar storm may be reproduced by disturbing a candle flame.——The *Food Journal* says:—"In ten years a fishing village may spring up into a town—a quiet bay become a fashionable watering-place. The increase may not be the natural growth by excess of births over deaths, but due to other causes, acting spasmodically and unforeseen. The further, therefore, we get from a census, the less reliance can we place on the figures denoting the *estimated population*, that is, the population at the preceding census, with the addition for each year that has since elapsed of the annual increase, as ascertained from an average of the preceding decade of years. It may be Utopian to hope for a more frequent enumeration of the people; but Prussia, with her triennial census, and France, with her quinquennial returns, should stimulate our exertions in this direction." Why should there not be an annual enumeration of simply the numbers and ages of the population?——"American Society of Civil Engineers: Transactions." No. XIV. March 16, 1870. A paper on American Interoceanic Ship Canals, by Col. J. W. Adams, member of a committee on this subject, occupies the pages of the number under notice. Col. Adams advocates the Tehuantepic route in preference to any other of the twenty-six various routes for a canal across the narrow neck of Central America. The Darien route he considers to be scarcely practicable, and if so at all, it would require, for a thorough cut, a ship tunnel miles in length. The Tehuantepic route, however, would require locks; but Col. Adams states that as the tide on the Pacific side rises 18 ft. to 20 ft., while there is no such tide in the Gulf of Mexico, locks are unavoidable on any route. The society, having heard the paper, passed a resolution in favour of the Tehuantepic route as best suited for United States purposes as regards its northern position, and expressing an opinion that a survey of it should be made before the citizens should be committed to any other route.——"Trade-unions and the Cost of Labour: Speech delivered by Thomas Brassey, jun., M.P., in the House of Commons, 7th July, 1869." London: Longmans, Green, & Co., 1870. The vast and varied experience of Mr. Brassey, sen., gives great force to anything based, as much of his son's speech was, upon that experience. Mr. Brassey, in reprinting his speech, has given additional statistical details, and inserted a few new observations on the danger to the working classes of the restrictions imposed on the free supply of labour by the dictation of ill-informed agitators. In this speech Mr. Brassey urges the injustice of condemning British labour as more costly in its results, simply because the daily rates of pay are higher in England than on the Continent; but he "condemns the errors into which our operatives are being betrayed by the ill advice of leaders who have no just claim to the influence which they unhappily possess."——"Report to the Finance and Improvement Committee of the City Commissioners of Sewers, upon Street Tramways. By William Haywood, Engineer and Surveyor to the Commission." This report shows that the total length of street in the City at present proposed to be occupied is 3,268 yards, or about a mile and three quarters. The total length projected in the whole metropolis is 134 miles. Mr. Haywood's conclusions are that,—

"While there are undoubted advantages in street tramways, yet there are many disadvantages attending them, but there can be no doubt that they will afford much comfort and convenience to a vast number of people: on the other hand, in streets of great traffic, it will no longer be possible to maintain the pavements in a similar condition to that in which they now are; and therefore that the comfort of those who ride in or drive vehicles of another description will be more or less sacrificed to the comfort of those who ride on the tramways."

Mr. Haywood also remarks that,—

"Special consideration will be needed as to how far companies should be allowed to establish what may, in a degree, be considered a monopoly of portion of the highway; and it becomes a question, if the advantages to be

derived from the tramways are clear and undeniable, whether it should not be the duty of the Highway Boards throughout the country to form and maintain them out of the rates; and this is a fundamental question which lies at the threshold of the whole inquiry."

——"Report of the Health of Liverpool during the year 1869. By W. S. Trench, M.D., Medical Officer of Health for the Borough." (Liverpool Printing Company.) From this report it appears that in 1869 the death-rate of the borough was equal to 28·9 per 1,000, or 3 per 1,000 less than the average rate which has prevailed for the past ten years. The death-rate of the parish was equal to 31 6, and of the out-townships 25·8 per 1,000. The highest rate was found, as might be expected, in Vauxhall Ward, where it was 38·8 per 1,000. With reference to the comparative mortality in the large towns of the kingdom, Liverpool stands fourth, being less unhealthy than Glasgow, Edinburgh, and Manchester. The population per acre is higher in Liverpool than any other town in the kingdom, being 97·7 per acre. In Manchester the average is 91, in Glasgow 79, while in London it is 40·7, and in Birmingham, 46. The average age at death throughout the borough is 23 years. The deaths of infants below the fifth year of their age amounted to 7,319, or about 49·6 per cent. of the entire number of deaths, and were equal to 10·5 per cent. of the entire number of children under that age. Infant mortality is highest in Scotland and Vauxhall Wards. The number of deaths from typhus and intermittent fever was 783, which is considerably below the average for the preceding ten years, the figures for which are given at 1,050. Dr. Trench says of scarlatina that it assumed during the last six months of 1869, within the borough of Liverpool, the gravity of an epidemic. It accounted for 1,042 deaths out of 14,744, and was at the rate of 2 per 1,000. It constituted 7 per cent. of the whole deaths, and was most fatal in the third and fourth quarters of the year. Of the Workshops' Regulation Act the medical officer is constrained by further experience to express his opinion that, "however beneficent in intention, it is not only impracticable in its machinery, but inequitable in its effects."

Miscellanea.

Society for the Encouragement of the Fine Arts.—On Tuesday last there was an exhibition of a collection of drawings and paintings by Birkett Foster, Richardson, Mole, Henry Tidey, Girardot, Shalders, and other artists,—Mr. Richard Redgrave, R.A., in the chair. Mr. Henry Tidey read a paper on "Beauty and the Beautiful." He insisted that the source of all beauty (which he defined to be realism idealised) was not something apart from, but existed only in, our minds. He next adverted to the different national types of beauty—to the melancholy ideal, at one time, of Italian art—the emaciated saint; to the glorious colouring of Rubens, which was but a reflex of his own times; and to English landscape painting and portraiture, which accorded with our scenery and mode of life; and he concluded an admirable lecture with some feeling allusions to the disappointed hopes of the artist in his search after beauty, to the shortness of the moments of inspiration accorded to him, and to the impossibility of ever attaining to the ideal perfection which was the aim of his life.

Discovery of a Roman Amphitheatre in Paris.—Modern Paris covers the ground of old Lutetia, the capital of Transalpine Gaul, and it is surprising that so many centuries should have passed before this relic of the olden time has been brought to light. This Gallo-Roman amphitheatre, in which public games were held as late as the period of the Merovingian kings, occupies the eastern side of the Mons Lucotitius, now the Montagne Ste.-Geneviève. It had become gradually hidden under a thick deposit of rubbish from 7 to 8 mètres deep. About one-half of its vast oval, according to *Galignani*, is now uncovered, in the Rue Monge, on the site where, not many years ago, stood a convent of English nuns. The rows of stone seats on this side are nearly all destroyed, but the main walls, built of stone and Roman cement, without any admixture of brick, are still in good preservation. Two of the recesses in which the wild beasts used to be kept are still visible. The style of building denotes a later period than that of the Palais des Thermès. Several medals and fragments of a rich turquoise and lapis-lazuli necklace with gold clasps have been found.

The Influence of the Suez Canal on Ocean Navigation.—At a recent meeting of the Institution of Naval Architects, Mr. J. D'Aguilar Samuda, M.P., read a paper upon "The Influence of the Suez Canal upon Ocean Navigation." He said that the canal would make the following savings in distance in the voyage to England:—From Bombay, 5,570 miles; Ceylon, 3,840; from Hong Kong and Singapore, 3,520; and from Melbourne, 91 miles. This represents a saving of about half the distance between England and Bombay, about one-third the distance between England and China, and practically none between England and Australia. Manifestly, then, the canal will greatly benefit carriers. The opening of the canal had caused a great falling off in the construction of sailing ships, and it tended to the further substitution of steam for sails in carrying on our traffic with the East. Without doubt, nearly all the traffic between here and Bombay will be lost in sailing-ships; but as the lives of sailing-ships were not of long duration, he thought the present panic among owners of such ships was not fully justified. He thought that there would shortly be a great substitution of steel for iron in hulls of ships, and a general adoption of the principles of expansion in engines. A report presented by M. de Lesseps to the meeting of Suez Canal shareholders at Paris, we may here add, states that the total number of vessels that passed through the canal from the day of its opening to the 15th of March was 209, representing 146,631 tons; and of these 56,052 tons were English vessels, 34,390 French, 17,666 Egyptian, 14,625 Austrian, 7,386 Italian, 4,178 Russian, 4,000 Norwegian, 3,200 Dutch, 880 German, 528 Spanish, 3,015 Prussian, 869 Portuguese, and 342 Turkish. Of the 209 vessels 200 were steamers, the others were sailing vessels. With respect to England, the report says, "England has from the first day been able to utilise the canal largely. You have seen what an imposing commercial fleet she has sent to it, and that fleet augments every day. Building yards work literally night and day in the United Kingdom in transforming or building vessels. We could cite to you a single company which, in its calculations, has put down an annual payment of 100,000*l.* for the canal."

Sunday Water Supply.—The want of a supply of water on Sundays, in the metropolis, has long been a grievance, as old readers of the *Builder* must well know, from our frequent endeavours to obtain a remedy for that grievance, which, however, still exists, though not to such an extent as formerly. We are glad to notice that leave has been given to Mr. Stapleton to bring a Bill before the Legislature requiring the metropolitan water companies to supply water for domestic purposes on Sundays. The West-Middlesex Water Company has already begun to give a Sunday supply; the Chelsea Company has promised to give a half supply; the Grand Junction Company supplies a considerable quantity of water; and the New River Company supplies 57,000 houses on Sunday. The East London Company has always been ready to furnish a Sunday supply when needed in times of epidemic, upon which Mr. Stapleton very properly remarks:—"By giving a Sunday supply in times of epidemic, the company admitted its necessity; and by withdrawing it at the end of one outbreak of epidemic disease they had laid the foundation of another." The Southwark and Vauxhall Company supply on Sunday the whole of their metropolitan but not their suburban district; and the Lambeth Company has followed the course of the New River and Grand Junction Companies; while the Kent Company, which supplies Greenwich and Woolwich, "made the objection that a great part of their district was not in the metropolis."

Institution of Surveyors.—At the ordinary general meeting held on Monday, April 4th, the discussion on the paper by Mr. J. Mathews, entitled "A Plea for Culture in the Profession of a Surveyor," then ensued; and a vote of thanks was accorded to Mr. Mathews. The next meeting will be held on Monday evening, April 25th, when a paper will be read by Mr. E. Ryde, in continuation of his paper of last session, entitled "Parochial Assessments." Answers to the Questions on Agricultural Customs are needed for the following counties, and the council appeal to members and their friends to supply the information necessary to complete the returns, viz.;—Westmoreland, Lancaster, Northampton, Leicester, Berks, Essex, Kent, Dorset, Rutland, and Worcester.

Raising the Euston Station Roof.—Five bays, or 100 ft. in length, that is the distance included between six columns, and 145 ft. in width—the whole width of the station—are raised at once in the following manner, according to the *North Londoner*:—The columns are first detached from the ground, and a platform of wood, 3 ft. or 4 ft. square and as many inches thick, is placed on each side of them, and cut and wedged up so as to overcome all inequalities, and present a perfectly smooth upper surface. On each platform so prepared is placed a screw-jack—a strong iron frame on a very wide base—containing an immensely powerful steel screw, 3 ft. 2 in. long, worked upwards by means of levers, which enter horizontal holes in the head. This head has a pivot at the top, on which turns a cast-iron socket, 9 in. or 10 in. square, made to receive the ends of massive timbers that go to the whole height of the column into similar iron sockets in the underside of a sort of iron box made to bolt like a mould round both the cap of the column and the bottoms of the two iron girders carried by it. In some cases the timbers, which are two separate pieces bolted together, do not enter sockets at the top, but are cut to fit outside the iron girders, and screwed together; and as the soft wood yields readily to any inequality in the iron, a firmer and more vice-like hold is obtained by this than by the former method. In addition to this, strong beams are screwed together and arranged according to scientific principles, so as to make the part that is to be moved one solid mass, and to prevent the slightest possibility of its tilting over in any direction; and so skilfully has the disposition of these numerous supports and ties, been managed, that there is not the slightest obstruction to the traffic. Everything is stowed away up in the air amongst the iron rods of the roof, except a few scaffolding poles, that get into nobody's way if nobody gets into theirs. The segment to be moved is severed from the rest, the boarding and slates of the roof taken up, and the glass of the sky-light taken out at the joint, and all is ready for the great operation of lifting to begin.

The Rotundity of the Earth.—A stupid attempt has been made for some years past to induce the belief that the earth is a flat surface, and a Mr. Hampden, who seems to have been persuaded that it is so, has rashly risked 500*l.* on the issue of an experiment on the Bedford Level in order to test the truth of the assertion. His offer was taken up by Mr. A. R. Wallace, and arrangements satisfactory to Mr. Hampden having been made, the experiment was tried by means of three discs, rising 12 ft. above the level of the surface of a piece of water large enough to show the curvature, if there were any. The referee has just decided against Mr. Hampden, the central disc, as every one with a grain of sense supposed it would, rising considerably above the line formed by the two outer discs, as seen from one end through a selected and approved telescope. The curvature to and fro in six miles to the extent of about 5 ft. was proved. As was also to be suspected, an attempt is being made to shuffle out of the bet, now that it has been decided.

Civil Service Estimates.—The Civil Service Estimates have been issued. The total is 16,416,265*l.*, against 16,316,388*l.* last year, showing a net increase of 99,877*l.* On public works and buildings there is a net decrease of 70,173*l.*; on salaries and expenses a net decrease of 30,671*l.*; on law and justice a net increase of 138,592*l.* The department of education, science, and art shows a net increase of 88,916*l.* Under this head the cost of public education is shown to be 914,721*l.*, against 840,711*l.* last year.

Guildhall, London.—At the last Court of Common Council an offer from some of the principal inhabitants of the ward of Farringdon Without, to put a stained glass window in the Guildhall, in commemoration of the great improvements which have recently been carried out in that ward by the corporation, at an expense of 3,500,000*l.*, was accepted by the court, and it was referred to the City Lands Committee to give the necessary directions.

Interesting Discovery at Newcastle.—The workmen engaged in the excavations near the Black Gate, Newcastle, have discovered a curious subterranean passage, at a depth of about 12 ft. from the surface. The passage extends underneath the ancient gateway, and is, like the basement of that ancient building, in an excellent state of preservation.